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TECHNICAL MANUAL

OPERATION, SERVICE AND REPAIR

AIRCRAFT AND MISSILE ENGINE LIFT TRAILER

MODEL 4000A

(FSN 1730-789-1249)

(AMERICAN ELECTRONICS)

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(ATOS)

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SECTION I

INTRODUCTION

1-1. GENERAL.

1-2. This handbook is the basic handbook of Operation, Service and Repair covering Aircraft and Missile Engine Lifting Trailer, P/N 4938001, Model 4000A, FSN 1730-789-1249 manufactured by American Electronics Incorporated, El Monte, California.

1-3. PURPOSE.

1-4. The purpose of the model 4000A Trailer is to facilitate an expedient safe method of removal, transfer and installation of heavy aircraft components and other comparable equipment.

1-5. DESCRIPTION. (See figure 1-1.)

1-6. GENERAL.

1-7. The model 4000A Trailer is a four wheel mobile, hydraulically controlled self-supporting unit. No special tools or power source is required for operation. The trailer consists essentially of a set of rails connected to an elevating main frame by a hydraulically controlled linkage system. The main frame is supported by four wheels. A towbar forward and a pintle hook aft provide means of transporting the trailers singularly or in train.

1-8. Coupling assemblies are provided at rail ends to facilitate load transferance from the Model 4000A to other elements of the American Electronics ground handling system.

1-9. DETAILED DESCRIPTION. (See figure 1-1.)

1-10. CHASSIS ASSEMBLY.

1-11. The chassis assembly consists of a main frame (1) supported by hydraulically controlled wheel support arms (2), four wheels (3), and tierod assemblies (4). The hydraulically controlled wheel support arms (2) are operated by wheel lift cylinders (5). A ratchet and pawl system is provided on wheel lift cylinders to provide maximum safety at any position. The hydraulic oil reservoir (6) is located in the main frame center section. The selector valve (7) and handpumps (8) are located in the main frame side rail. Foot brakes (9) are provided on the rear wheels. Foot assemblies (10) are provided to facilitate absolute static position during critical operations. A towbar (11) and a pintle hook (12) provide a means of transport, singularly or in train.

1-12. LIFT LINKAGE.

1-13. Lift linkage consists of four lower links (13) and four upper links (14). The four lower links are hinged to the four corners of the main frame assembly (1). The upper links (14) and lower links (13) are centrally hinged in a jack-knife position and are raised and lowered by means of frame lift cylinders (15). A ratchet and pawl system is provided on lift rams for maximum safety.

1-14. UPPER FRAME, CRADLE AND RAIL ASSEMBLY.

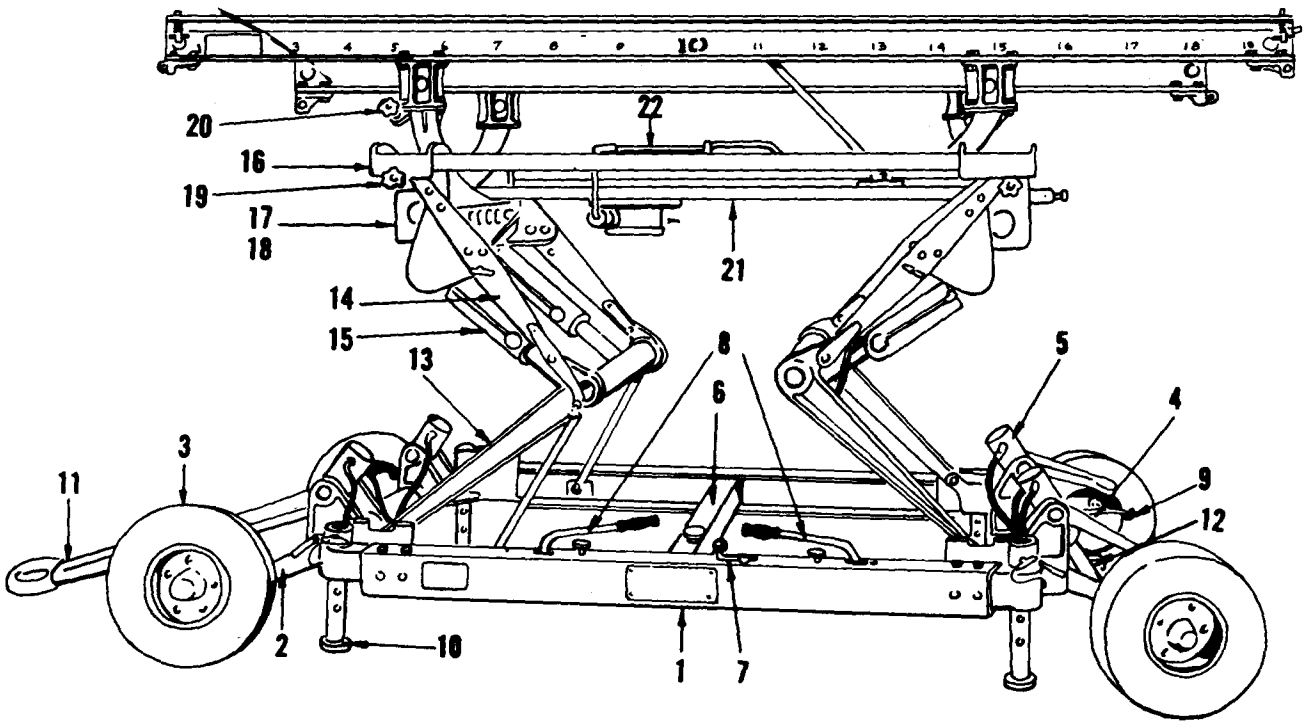
1-15. The forward and aft ends of the upper frame assembly (16) house the cradle assemblies (17). Each cradle assembly houses two roller assemblies (18) upon which the tube and rail assembly rolls. Traverse adjustment assembly (19) provides lateral and yaw movement of the rails and rotation adjustment assembly (20) provides rail rotation adjustment.

1-16. WINCH ASSEMBLY.

1-17. A winch assembly (21) and winch drive assembly (22) are provided to facilitate moving a load onto the trailer when the rails are in an inclined position. The winch assembly may be removed from the trailer and stored when not required for handling operations. Prior to transfer or shipment of the trailer the winch assembly will be reinstalled on the trailer from which it was removed.

1-18. HYDRAULIC SYSTEM. (See figure 1-2.)

1-19. The hydraulic system consists of four hydraulic cylinders (1) which raise and lower the upper frame assembly, four wheel lifting hydraulic cylinders (2) which raise and lower the main frame, two handpumps (3) which operate the hydraulic cylinders, by selection, made by the selector valve (4), a hydraulic reservoir (5) containing the hydraulic fluid supply, and connecting lines and fittings.



1. Main Frame
2. Wheel Support Arm
3. Wheel
4. Tierod
5. Lift Cylinder
6. Reservoir
7. Selector Valve
8. Hand Pump
9. Foot Brake
10. Foot Assembly
11. Towbar
12. Pintle Hook
13. Lower Link
14. Upper Link
15. Frame Lift Cylinder
16. Upper Frame Assembly
17. Cradle Assembly
18. Roller Assembly
19. Traverse Adjustment
20. Rotation Adjustment
21. Winch Assembly
22. Winch Drive Assembly

Figure 1-1. Model 4000A, Aircraft and Missile Engine Lifting Trailer

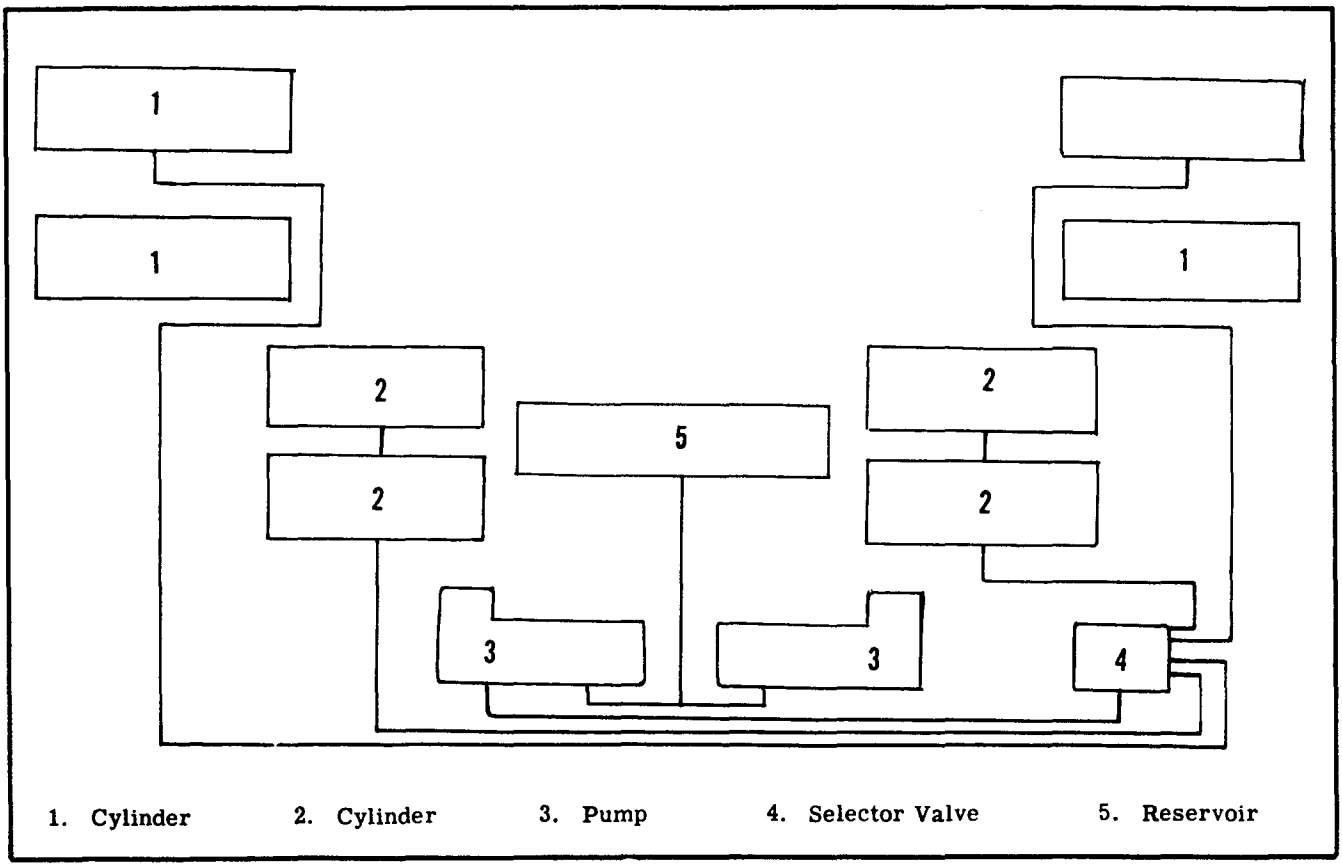


Figure 1-2. Hydraulic Diagram

MOBILITY DATA
TYPE II MOBILITY PER MIL-M-8090
Maximum Load . . . . . 8000 pounds
Towing Speed. . . . . 20 MPH Max
Tire Inflation . . . . . 100 psig
Turning Radius . . . . . 14 ft. Min

GENERAL
Tire Size . . . . . 6.00 x 9
Trailer Weight. . . . . 2760 pounds
Hydraulic Relief Pressure Setting. .4500 psig
Clearance Radius (Turning) . . . . . 20 ft.

POSITIONING DATA
Rotation . . . . . ± 10 degrees
Lateral. . . . . .± 3 inches
Tilt . . . . . ± 10 degrees
Yaw . . . . . ± 2. 25 degrees
Elevation (No Load) . . . . . 31. 5 to 89 inches with spacers
24. 5 to 82 inches without spacers

DIMENSIONAL DATA
Wheel Base . . . . . 126 inches
Tread . . . . . .72 inches
Rails Center to Center . . . . . .48 inches
Rail Width . . . . . 3. 33 inches
Rail Length . . . . . 152 inches

Figure 1-3. Table of Leading Particulars

SECTION II

OPERATION AND SERVICE INSTRUCTIONS

2-1. PREPARATION FOR USE.

2-2. If trailer is crated, remove crate and prepare for use as follows:

a. Remove sides and top of crate.

b. Assemble the draw-bar to the draw-bar link with the attached hinge pin.

c. Check hydraulic fluid level in reservoir, refill if necessary to a depth of 3 inches. Check fluid level with all pressure released from cylinders and lines with trailer lowered to the ground in the transport position. MIL-H-5606 is system fluid. When received from the manufacturer, the hydraulic system is filled with hydraulic preservative oil, MIL-H-6083 which is compatible with the system fluid and need not be replaced.

d. Check all pressure lines for damage and fittings for tightness.

e. Following operating instructions, paragraph 2-4, raise main frame from crate, release foot brakes and roll trailer clear of crate bottom.

CAUTION

If trailer has been stored for prolonged periods, conduct test procedure per paragraph 3-28.

2-3. OPERATION. (See figure 2-1.)

NOTE

If hydraulic action does not function properly, bleed system in accordance with paragraph 2-8.

2-4. RAISE MAIN FRAME.

a. Turn selector valve (1) to "WHEEL CYLINDER" position.

b. Close pump by-pass valve (5).

c. Raise main frame by operating two hand pumps (3) simultaneously.

2-5. LOWER MAIN FRAME.

a. With selector valve (1) set at "WHEEL CYLINDER"position, release the four safety Locking Pins by pulling handles (4).

NOTE

Safety pawls must be in disengaged position during entire lowering procedure. If pawls will not readily disengage, raise the main frame slightly.

b. Lower main frame by opening by-pass valves (5). Amount valves are opened controls the rate of descent. When desired height is obtained turn by-pass valve knobs to fully closed position.

2-6. RAISE RAILS.

NOTE

The rail position adjustment is universal and any combination of positions may be accomplished within the limits described in the Leading Particulars, Figure 1-3.

a. Position selector valve (1) at "LIFT CYLINDER" position.

b. Raise rails to desired position by operating two hand pumps simultaneously.

2-7. LOWER RAILS.

a. With selector valve at "LIFT CYLINDER" position, release two safety pawls by pulling knobs (6).

b. Lower mainframe by opening by-pass valves (5). Amount valves are opened controls the rate of descent. When desired height is obtained turn by-pass valve knobs to fully closed position.

2-8. HYDRAULIC SYSTEM BLEEDING INSTRUCTIONS. (See figure 2-1.)

WARNING

Hydraulic fluid (MIL-H-5606) is highly toxic to skin, eyes and respiratory tract. Skin and eye protection is required.

a. To bleed upper frame lift cylinder (19):

1. Set selector valve (1) to "lift cylinder" position.
2. Close by-pass valves (5).
3. Raise rails to full height by operating hand pumps.
4. Crack line fitting at head of one cylinder.
5. Bleed until hydraulic fluid shows no bubbles. Work pump handle 3 or 4 strokes to clear lines.
6. Close line fitting.
7. Repeat for other three frame lifting cylinders.

b. To bleed wheel lifting cylinders (2):

1. Set selector valve (1) to "wheel cylinder" position.
2. Close by-pass valves (5).

3. Raise main frame to full height by operating the hand pumps.
4. Crack bleed plug at head of one cylinder, on the side of cylinder opposite the hydraulic inlet line.

NOTE

Bleed only the two cylinders located on the trailer side opposite the hand pumps.

5. Bleed until hydraulic fluid shows no bubbles. Work pump handles 3 or 4 times to clear lines.
6. Tighten bleed plug.

a. Fully lower upper frame and transfer rails and lower main frame to transportation position. Refill reservoir (20) to within 1/4 inch of the bottom of the filler tube with hydraulic fluid, MIL-H-5606.

2-9. TILT RAILS.

a. To tilt rails, the fore and aft ends shall be raised and lowered individually. Follow procedures for raising and lowering rails, paragraphs 2-6 and 2-7.

CAUTION

1. Rail angle must not exceed 10 degrees.
2. Use extreme caution while tilting rails when main frame is in low position. Aft linkage must not touch ground.
3. If aft linkage inadvertently touches ground, slowly back off forward by-pass valve until rails are level; then raise rails evenly until high enough for tilt angle.

2-10. LATERAL AND YAW. (See figure 2-1.)

a. Lateral movement of rails is accomplished by rotation of traverse adjustment handles (7). Yaw adjustment is accomplished by individual operation of adjustment handles (8).

CAUTION

Do not force adjustment beyond initial resistance.

2-11. ROLL RAILS.

a. Roll adjustment is accomplished by turning rotation adjustment handle (8).

2-12. LOWER FOOT ASSEMBLIES.

a. Pull pin (9) and lower foot assembly (10) to lowest position where pin can be replaced.

b. Follow procedure for lowering mainframe, paragraph 2-5, until foot assemblies make firm contact with floor or ground.

2-13. COMPONENT REMOVAL AND INSTALLATION. (See figure 2-1.)

2-14. Details of component removal and installation vary with each application but the following general notes shall be followed:

a. If operation requires accuracy in positioning, stabilize trailer by lowering foot assemblies (10). If foot assemblies are not used, set foot brakes (11).

b. When installing roller adapters (12) back of (15) until jaws (14) will straddle rail flange.

NOTE

Roller adapters (12) are accessory equipment and are mentioned in this publication for reference only.

CAUTION

Lock all roller adapters by tightening at location (15) with a 1/2 inch square socket drive before releasing components from other means of support or retaining provision.

c. To remove component horizontally, roll component and supporting adapter assemblies into position on trailer rails with 1/2-inch socket drive at location (13).

d. For inclined removal of component, secure to winch assembly (16) by means of adapter which installs in draw-bar tube (17).

e. Eliminate slack from linkage by rotation of winch drive (18) and accomplish removal of component with winch.

WARNING

Make certain roller adapters are in locked position before disconnecting draw-bar or moving trailer.

f. Before moving away with loaded trailer, observe number nameplate on component adapter and position left roller adapter with corresponding number on transfer rail to properly locate center of gravity of load on trailer.

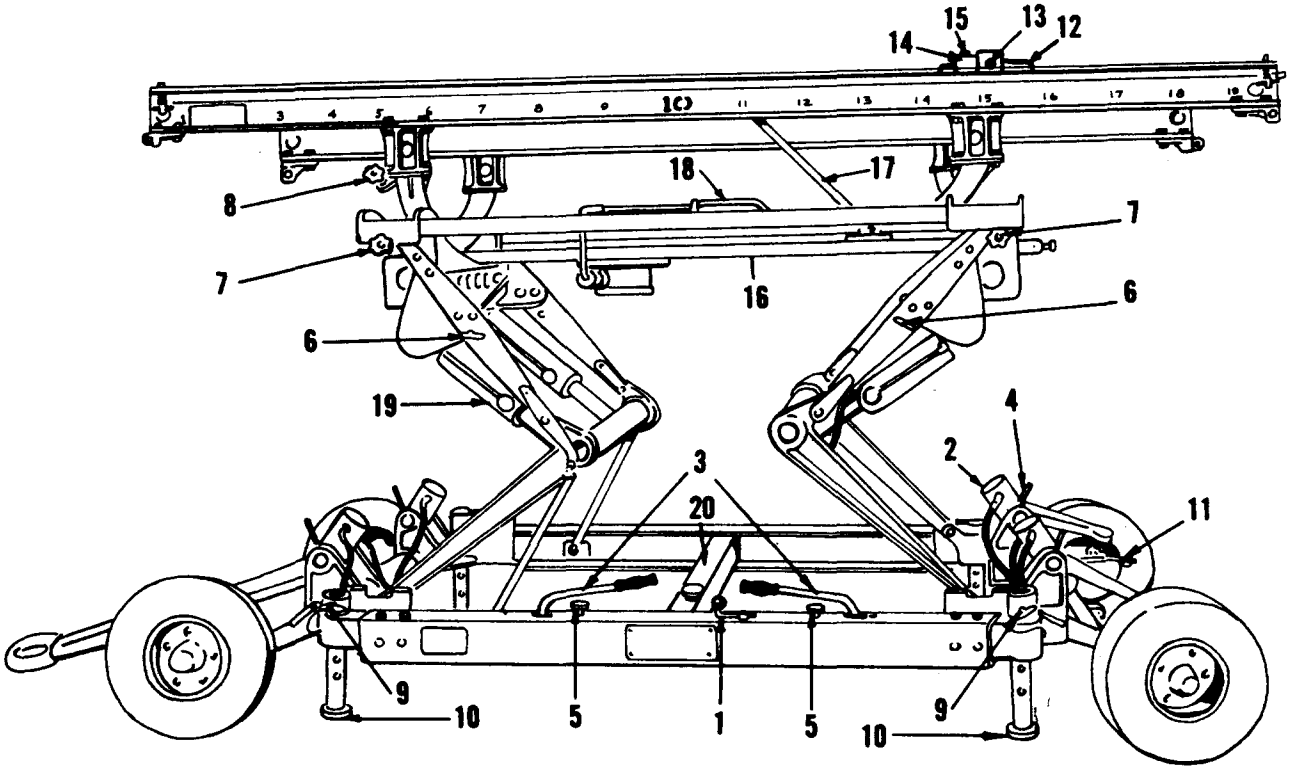
WARNING

Center of gravity of load must not move beyond limit position indicated on rails unless rail ends are adequately supported.

2-15. LOAD TRANSFER. (See figure 2-2.)

a. Adjust rails to a level height that squarely matches rails of receiving trailer.

b. Secure couplings (1 and 2) with lock-pin (3).



1. Selector Valve
2. Wheel Lift Cylinder
3. Hand Pump
4. Handle
5. By-Pass Valve
6. Knob
7. Traverse Adjustment
8. Rotation Adjustment
9. Pin
10. Foot Assembly
11. Foot Brakes
12. Roller Adapter
13. Drive Location
14. Jaw
15. Drive Location
16. Winch Assembly
17. Draw-Bar Tube
18. Winch Drive
19. Upper Lift Cylinder
20. Reservoir

Figure 2-1. Operation

c. Unlock roller adapters and roll load onto receiving trailer. Stops (4) must be held down to allow passage of roller adapter.

d. Lock roller adapters after positioning center of gravity of load.

e. To disconnect trailers adjust rail height of positioning trailer until quick-release pin (3) can be removed by hand.

2-16. TOWING.

a. Make certain roller adapters are secure.

b. Center lateral and rotational adjustment.

c. Lower rails until upper frame pads rest on lower frame pads.

d. Raise main frame to maximum height.

e. Check Leading Particulars for tire pressures and towing speeds.

2-17. LUBRICATION. (See figure 2-3.)

2-18. Lubrication and lubricants to be used at specific areas are as noted on "Lubrication Chart." (See figure 2-3). Lubrication to be accomplished once a year or more frequently if required by local conditions.

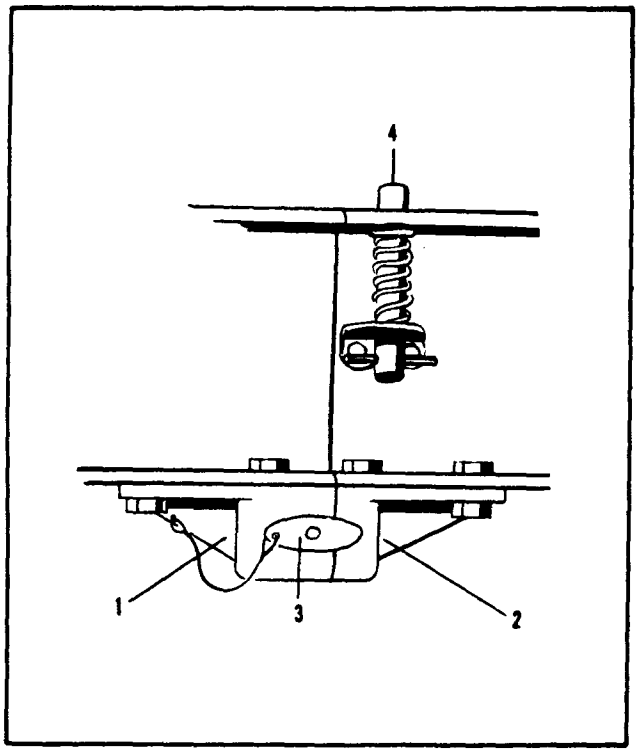


Figure 2-2. Load Transfer

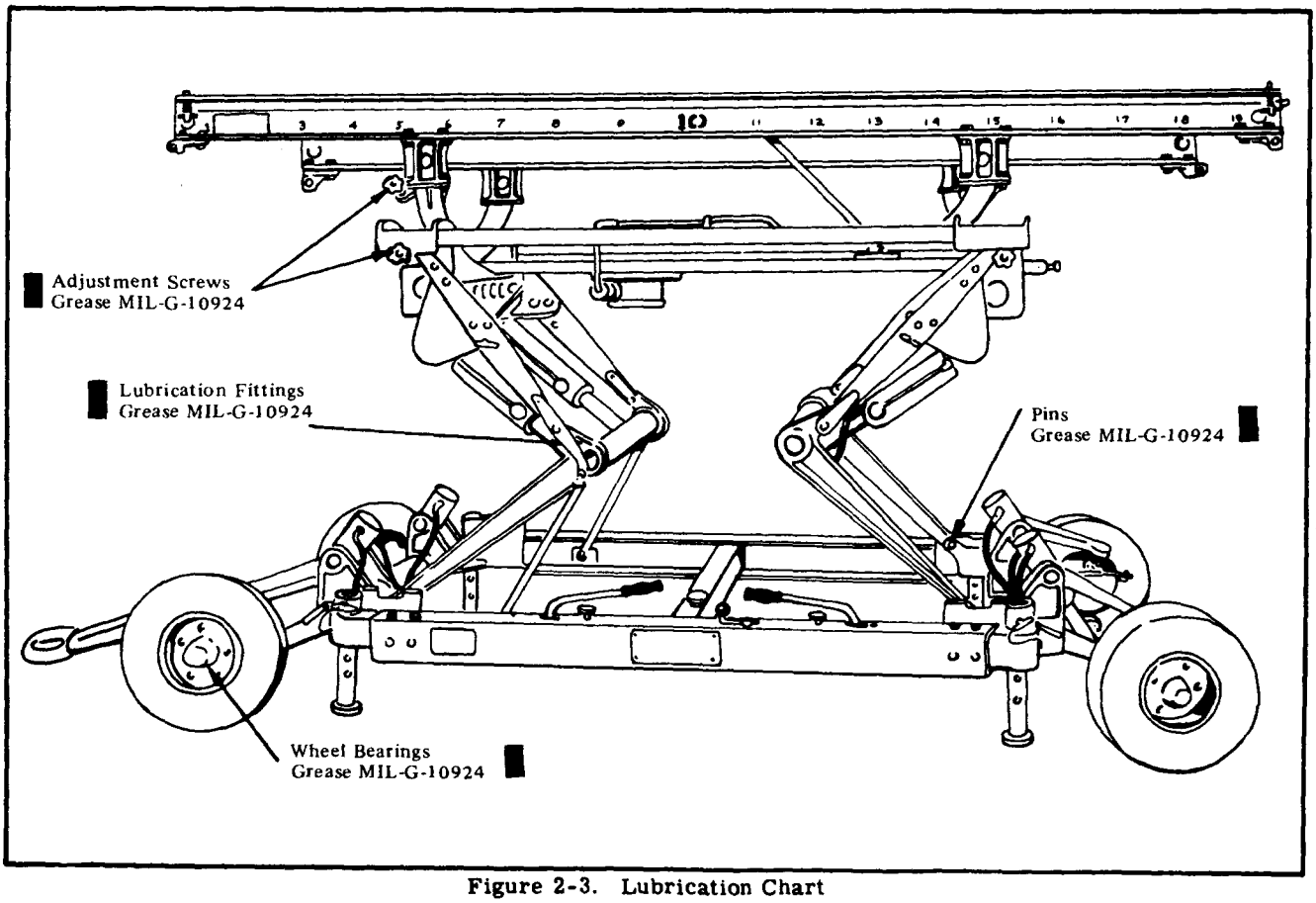


Figure 2-3. Lubrication Chart

2-19. INSPECTION. (See figure 2-4.)

2-20. PRE USE INSPECTION. The inspection cited in figure 2-4 will be accomplished prior to each days use when the trailer is used to install or remove an engine.

2-21. TROUBLE SHOOTING. (See figure 2-5.)

2-22. CARE OF TRAILER WHEN NOT IN USE.

2-23. When trailer is not in use, lower to transportation position.

2-24. For prolonged periods of storage, park in comparatively dust free area and cover with tarp.

CAUTION

If trailer has been stored for prolonged periods, conduct test procedure per paragraph 3-28 prior to use.

ITEM
TIRES: for damage and pressure
WHEELS: for security
BRAKE ASSEMBLIES: for proper braking action
TOWBAR: for security and condition of hinge pin
OUTRIGGER, JACK, and FOOT ASSEMBLIES: for proper action
STEERING LINKAGE: for damage, distortion, loose connections, and excessive wear
PINTLE HOOK: for security
HYDRAULIC SYSTEM: for sufficient oil supply, damaged lines, and evidences of external leakage at cylinders, valves, and fittings
LIFT LINK ASSEMBLIES: for weldment cracks, damage, distortion, excessive wear, and security at hinge points
CYLINDER ASSEMBLIES: for proper lift action inspect for damage / leakage
RATCHET and PAWL ASSEMBLIES: for proper operation perform inspection in the following order. Operate cylinder to insure that the internal lock is ratcheting while being extended. Allow the cylinder to rest, and insure it does not retract. Open release valve to insure that the internal lock is activated and the cylinder does not retract. With release valve open, pull handle that activates the cable to release the internal lock to insure cylinder retracts. Ensure that the cable not have only tension on it when the lock is in position and that it has a little slack.
PUMP ASSEMBLIES: for equally efficient and proper operation
WINCH ASSEMBLY: for condition of-chain and security of drawbar
QUICK DISCONNECTS and PRESSURE GAUGES: for installation security and proper operation (Model 4100B trailer only)
ATTACHING HARDWARE: for condition and tightness
LUBRICATION FITTINGS: for damage and obstruction

Figure 2-4. Inspection Table

TROUBLE	PROBABLE CAUSE	REMEDY
Brake failure	Worn linings	Replace shoe and lining assemblies with new
	Brake pedal pawl or spring broken, or pawl is not engaging properly with brake sector	Replace pawl or spring with new as necessary
	Brake pedal assembly shipping on shaft	Tighten pedal assembly
	Brake shoe spring broken	Replace brake shoe spring with new
Improper Winch Action	Broken chain assembly	Repair chain
	Sheared sprocket shaft	Replace sprocket shaft with new
	Sheared pin in winch drive assembly	Replace sheared pin
	Slider comb improperly engaged	Check slider assembly for improper comb engagement or damage
	Improper gear box overload clutch action	Check clutch adjustment and adjust if necessary per Test Instructions
Shimmy while towing	Low tire	Check tire inflation
	Bent wheel	Replace wheel
	Worn or distorted steering linkage or tierods	Straighten, repair or replace distorted parts
	Loosen or worn spindle balls	Tighten or replace spindle balls and retainers
	Main frame out of alignment	Align or replace parts of main frame as necessary
Improper lift action	Insufficient hydraulic oil supply	Add hydraulic oil
	Leakage at pressure lines or fittings	Replace broken lines with new and tighten fittings
	Worn hydraulic rams or pumps	Replace with new or overhaul worn assemblies
	Dirt obstruction pumps or hydraulic lines	Clean as necessary
	Air in hydraulic lines	Bleed lines. See paragraph 8.
	Worn hinge pins, bearings and bushings	Replace excessively worn hinge pins, bearings and bushings with new.
	Distorted link assembly	Straighten or replace distorted link assembly with new
	Loose attaching parts	Tighten attaching parts
Slow setting from elevated position with ratchet and pawl assemblies disengaged	Leakage in the hydraulic system or air in the pressure lines.	Repair area of leakage. Bleed system per paragraph 8.
With ratchet and pawl assemblies engaged	Worn or damaged pawl Brocken pawl cable	Replace pawl with new Replace cable with new
Improper traverse and roll action	Damaged or disconnected adjustment assembly	Repair, replace or correct adjustment assembly
	Obstruction in the cradle or damaged roller assembly	Locate and remove obstruction. Replace or rapair roller assembly
Side sway while towing	Bent or disconnected tie rods	Repair tie rod
	Wheels out of alignment	Check alignment of wheels and for excessive tow-in
	Shifting load	Secure load
	Bent or Loose towbar	Repair, tighten or replace towbar

Figure 2-5. Trouble Shooting (Continued)

SECTION III

REPAIR INSTRUCTIONS

3-1. DISASSEMBLY. (See figures 3-1 through 3-15.)

3-2. GENERAL.

3-3. Disassemble the trailer in the general order of index numbers assigned to the exploded view illustration, paying particular attention to the following general procedures and precautions:

WARNING

Block linkage before removing pawl and ratchet assemblies on lift link and wheel cylinder rams.

a. Removal of press-fit bushings is not required unless clearance between the bushing and mating parts is in excess of maximum clearances specified in figure 3, Table of Fits and Clearances.

3-4. DISASSEMBLY OF TRAILER. (See figure 3-1.)

3-5. Disassemble in the order of index numbers assigned to the exploded view illustration paying particular attention to the following:

a. Raise main frame of chassis assembly to maximum height. Lower and secure four foot assemblies (74), figure 3-13.

b. Raise upper frame assembly (47) to convenient working height.

WARNING

Make certain safety pawls are securely locked before bleeding hydraulic lines.

c. Bleed hydraulic lines by opening by-pass valves on pump assemblies.

WARNING

Securely block linkage and make certain foot assemblies are secure before removal of hydraulic rams.

d. Removal of nameplates and attaching parts, indexes (141 through 153) is not required unless nameplates are defaced beyond legibility.

3-5A. DISASSEMBLY OF LOWER LINKS. (See figure 3-1.)

a. Raise upper frame assembly (47) to transportation height. Lower and secure four foot assemblies (74), figure 3-19. Raise upper frame assembly (47) and place a 1 ton jack stand underneath each corner of the channel assemblies (1), figure 3-8. Lower frame assembly (47) until the weight of the channel assemblies (1) rests on the four jack stands.

WARNING

- Hydraulic fluid is highly toxic to skin, eyes, and respiratory tract. Skin and eye protection is required.
- Make certain pressure from hydraulic system has been relieved before disconnecting hydraulic lines.

b. Remove hydraulic lines from upper lift links (74, 81, 87, 93), and lower lift links (102, 109). Disconnect hydraulic lines and cap and stow lines out of the way.

c. Starting with the rear linkage assemblies remove cotter pins (59, 68, 82, 88, 99, 106) from the following locations: (a) at mount points of lift cylinders (53) located on the lower tube assembly (94), (b) at hinge points of upper links (74, 81, 87, 93), and lower links (102, 109), and front connecting link rods (58), and (c) at mount points of lower links (102, 109).

d. Using standard shop floor jack, place jack centered under rear tube assembly (94). Raise jack until slight pressure is applied to the tube assembly (94).

e. Remove nuts (60), washers (61), and bolts (62) from rear lift cylinders (53) at mount points of tube assembly (94).

CAUTION

Support lift cylinders before removal of mount bolt. Ensure the upper lift links and lift cylinders are secured by attaching a cargo strap around both upper links and lift cylinders and braced to the channel assembly. Failure to do so may result in injury to personnel or damage to equipment.

f. Remove nuts (83), washers (84), and bolts (85) from hinge points of both upper links (87, 93), and lower links (102, 109). Lower tube assembly (94) by gradually releasing pressure from the floor jack. Remove washers (107) and pins (108) from the lower links (102, 109) and slide the lower links (102, 109) out from the trailer. Remove nuts (95), washers (96), and bolts (97, 98) and remove links (102, 109) from tube assembly (94).

NOTE

If link assemblies will not separate, recommend that assemblies be heated or baked at local machine shop.

g. Disassembly of the front lift links (74, 81, 102, 109) will be performed using procedures d, e, and f and with the exception that the link rods (58) will have to be disconnected. Installation of linkage assemblies will be in reverse order of removal.

3-6. DISASSEMBLY OF WINCH-DRIVE ASSEMBLY, (See Figure 3-2.)

a. Unless visual inspection reveals sheared pins (2, 6 and 8) or bent torque tube (5) and crank assembly (9), disassembly is not required.

3-7. DISASSEMBLY OF WINCH ASSEMBLY. (See figure 3-3.)

a. Disassembly is in order of index numbers assigned to the exploded view illustration.

3-8. DISASSEMBLY OF SPEED DECREASER GEAR BOX ASSEMBLY. (See figure 3-4.)

a. Disassembly is in the order of index numbers assigned to the exploded view illustration.

3-9. DISASSEMBLY OF TRANSFER RAIL AND FRAME ASSEMBLY. (See figure 3-5.)

a. Disassembly is in the order of index numbers assigned to the exploded view illustration.

3-10. DISASSEMBLY OF ROTATION ADJUSTMENT ASSEMBLY. (See figure 3-6.)

a. Disassemble in the order of index numbers assigned to the exploded view illustration.

3-11. DISASSEMBLY OF TRAVERSE ADJUSTMENT ASSEMBLY. (See figure 3-7.)

a. Disassemble in the order of index numbers assigned to the exploded view illustration.

3-12. DISASSEMBLY OF UPPER FRAME ASSEMBLY. (See Figure 3-8.)

a. Disassemble in the order of index numbers assigned to the exploded view illustration.

3-13. REMOVAL AND DISASSEMBLY OF HYDRAULIC INSTALLATION. (See figure 3-9.)

WARNING

1. If cylinder assemblies and safety pawls have not been removed make certain safety pawls are securely engaged with cylinder rams before bleeding pressure lines and removal of hydraulic components.

2. If cylinder assemblies and safety pawls have been removed, check security of linkage blocking installed at time of removal.

3. Under no circumstances shall any part of the hydraulic installation be removed when the trailer is under load.

a. Hydraulic installation is removed and disassembled in the order of index numbers assigned to the exploded view illustration except for the warning and following special procedures.

b. Forward and aft hydraulic groups are identical except for some left and right hand parts, therefore, duplicate index numbers have been assigned to forward and aft groups.

c. To remove selector valve (59), spring pin (56), and valve handle assembly, indexes (57) and (58) must be removed in addition to attaching screws (59).

3-14. DISASSEMBLY OF LH AND RH HAND DRIVEN RECIPROCATING PUMP ASSEMBLY. (See figure 3-10.)

a. Disassembly is in the order of index numbers assigned to the exploded view illustration.

3-15. DISASSEMBLY OF SELECTOR VALVE ASSEMBLY. (See figure 3-11.)

a. Disassembly is in the order of index numbers assigned to the exploded view illustration.

3-16. DISASSEMBLY OF UPPER FRAME LIFT CYLINDER ASSEMBLIES. (See figure 3-12.)

a. Disassemble in the order of key index numbers assigned to the exploded view illustration, noting the following:

b. Prior to removing pin (1), actuate release lever (2) to unlocked position and secure in unlocked position with approximately 3/16 inch thick spacer stock inserted between washer (4) and adjacent lock boss of cylinder and boss assembly (37).

NOTE

Do not remove shoulder screw (3), washer (4), piston (12), and compression spring (13), until locking nut (9) has been removed (refer to paragraph 3-16c).

c. After removing outer bushing (6), remove screws (19); lift assembled hydraulic lock piston components (18, 20 through 24) to unlocked position; partially withdraw ram (29) from cylinder and boss assembly (37); and remove washer (7), washer (8), and locking nut (9). Then remove shoulder screw (3) and washer (4), and remove piston (12) and compression spring (13) from cylinder ID.

d. Remove tube (16) and fitting (14). Then screw a 1-1/2 (minimun) No. 8/32 NC-2A screw into end of pin (17) within the hydraulic lock boss and remove the pin. Then remove the hydraulic lock piston components (18, 20 through 24) from the cylinder boss.

e. Remove the stop (25) and ring halves (26); and remove ram (29) from bore of cylinder and boss assembly (37), exercising care to maintain axial concentricity of ram and cylinder as the ram is withdrawn.

CAUTION

Exercise extreme care to avoid "cocking" cylinder rams; the ram piston head will cause probable serious damage to the machined cylinder ID unless axial movement of the ram is concentric within the cylinder.

3-17. DISASSEMBLY OF LH LINEAR ACTUATING CYLINDER. (See figure 3-13.)

a. Disassembly is in the order of index numbers assigned to the exploded view illustration.

3-18. DISASSEMBLY OF RH LINEAR ACTUATING CYLINDER. (See figure 3-14.)

a. Disassembly is in the order of index numbers assigned to the exploded view illustration.

3-19. DISASSEMBLY OF HYDRAULIC LINES SUPPORT COVER ASSEMBLY. (See figure 3-15.)

a. Disassemble the cover assembly in the order of index numbers assigned to the exploded view illustration.

3-20. DISASSEMBLY OF CONNECTING ROD LINK. (See figure 3-16.)

a. Disassembly is in the order of index numbers assigned to the exploded view illustration.

3-21. DISASSEMBLY OF BRAKE PEDAL ASSEMBLY. (See figure 3-17.)

a. Disassembly is in the order of index numbers assigned to the exploded view illustration.

3-22. DISASSEMBLY OF BRAKE ASSEMBLY. (See figure 3-18.)

a. Disassembly is in the order of index numbers assigned to the exploded view illustration.

3-23. DISASSEMBLY OF CHASSIS ASSEMBLY. (See figure 3-19.)

Disassembly is in the order of index numbers assigned to the exploded view illustration, paying particular attention to the following:

a. Do not remove inserts (60 and 66) unless inspection reveals necessity to replace with new, since removal will result in damage beyond repair.

b. Do not attempt disassembly of cylinders (69) since repair parts or procedures are not covered in this publication.

3-24. DISASSEMBLY OF TIEROD ASSEMBLY. (See figure 3-20.)

Disassembly is in the order of index numbers assigned to the exploded view illustration, paying particular attention to the following:

a. Do not attempt disassembly of tierod end (1).

3-25. DISASSEMBLY OF MAIN FRAME ASSEMBLY. (See figure 3-21.)

a. Disassembly is in the order of index numbers assigned to the exploded view illustration.

3-26. INSPECTION, REPAIR AND REPLACEMENT OF PARTS.

(See figure 2-4, Inspection Table, Figure 2-5, Trouble Shooting Table and Figure 3-22, Table of Fits and Clearances.)

a. General inspection shall be in accordance with Figure 2-4, Inspection Table.

b. Inspection for excessive wear between critical mating parts shall be in accordance with Figure 3-22, Table of Fits and Clearances.

c. Any part distorted beyond practicable repair shall be replaced with new.

d. If wheel bearings are worn or damaged, replace with new.

e. If hydraulic valves, pumps and cylinders are worn, fractured, or if port threads are stripped beyond practical repair, replace with new.

f. If threads and steering linkage are damaged or distorted beyond practical repair, replace with new.

g. Distorted lift linkage, frame and chassis components may be straightened if adequate equipment is available, otherwise replace with new.

h. If tilt indicator is inoperative, replace with new.

NOTE

When tilt indicator, Part No. A91005C, Figure 3-5, Index 1, is used, drill an additional hole using a 7/32-inch drill. Hole spacing will be 3-3/4-inch center to center.

i. Cross tube assembly repairs: The brackets on the forward cross tube assembly where the towbar fitting part No. 11426 is attached to the trailer may be repaired if the holes become worn and/or elongated in any direction 0.050 inch over standard diameter of 0.501 inch. Repairs shall be accomplished as follows: Ream the holes in line to a diameter of 0.549 + 0.0004. -0.0000 and insert press fit bushing part No. NAS75-8-010 or equal. Bushings may be locally manufactured and replaced as required provided the holes do not require further dressing for bushing installation. When the holes in the cross tube brackets exceed the tolerance specified the cross tube assembly will be replaced.

j. In the event users are experiencing wear of the lunette, installation of a rubber bumper on the towing tongue is authorized as shown in figure 3-2A.

3-27. TABLE OF FITS AND CLEARANCES. (See figure 3-22, Table of Fits and Clearances.)

NOTE

If clearances between parts listed in the following table are in excess of those specified, replace one or both mating parts with new, as necessary.

3-28. CLEANING.

3-29. Clean all parts thoroughly in cleaning solvent, Specification P-D-680, Type II, paying particular attention to the following:

WARNING

- Perform all solvent cleaning operations in an approved cleaning cabinet or in a well ventilated area. Avoid prolonged breathing of vapors. Avoid eye and repeated skin contact. Keep solvents away from sparks and flames.
- Use approved personal protective equipment (goggles/face shield) when using compressed air. Maximum allowable air pressure for cleaning operations is restricted to less than 30 psi. Provide protection from flying particles when using compressed air. Do not direct airstream towards self or other personnel.

a. Make certain all critical mating surfaces are free of dust, corrosion and solidified oil film.

b. Make certain all pressure lines, valves, ports and flow passages are free of obstruction.

c. Make certain all threaded areas are free of grit and other foreign matter.

d. Dry all parts thoroughly after cleaning.

3-30. LUBRICATION OF REASSEMBLY. (See figure 2-3, Lubrication Chart.)

a. Lubricate in accordance with Lubrication Chart at each overhaul.

3-31. REASSEMBLY. (See figures 3-1 through 3-21.)

3-32. GENERAL.

3-33. Reassemble each group assembly in the reverse order of index numbers assigned to the applicable exploded view illustration, paying particular attention to the following:

a. Support lift linkage assemblies with blocks or equivalent until hydraulic installation has been installed and reservoir filled.

b. Make certain all linkage hinge points are properly aligned.

NOTE

After steering linkage and tierods have been installed, adjust front wheels to 1.5 degree toe-in. Use standard shop practice for toe-in adjustment.

c. Make certain all attaching parts are secure and accounted for.

WARNING

Hydraulic fluid (MIL-H-5606) is highly toxic to skin, eyes and respiratory tract. Skin and eye protection is required.

d. Make certain all hydraulic lines and fittings are thoroughly clean and properly mated. Prior to installation, coat all straight threads with hydraulic oil, specification MIL-H-5606 and all tapered threads with antiseize compound, specification JAN-A-669.

e. When installing hydraulic rams make certain lubrication fittings are on the bottom side.

f. Make certain all lubrication fittings (69 total) are clean and installed.

g. Lubricate trailer in accordance with figure 2-3, Lubrication Chart, after complete reassembly.

h. Adjust brakes following standard mechanical brake adjustment procedure.

i. Fill Hydraulic Reservoir with Fluid, Specification MIL-H-5606, to a depth of 3 inches.

NOTE

Reservoir must be filled with upper frame fully lowered, main frame lowered to transportation position, and the pump handles in down position.

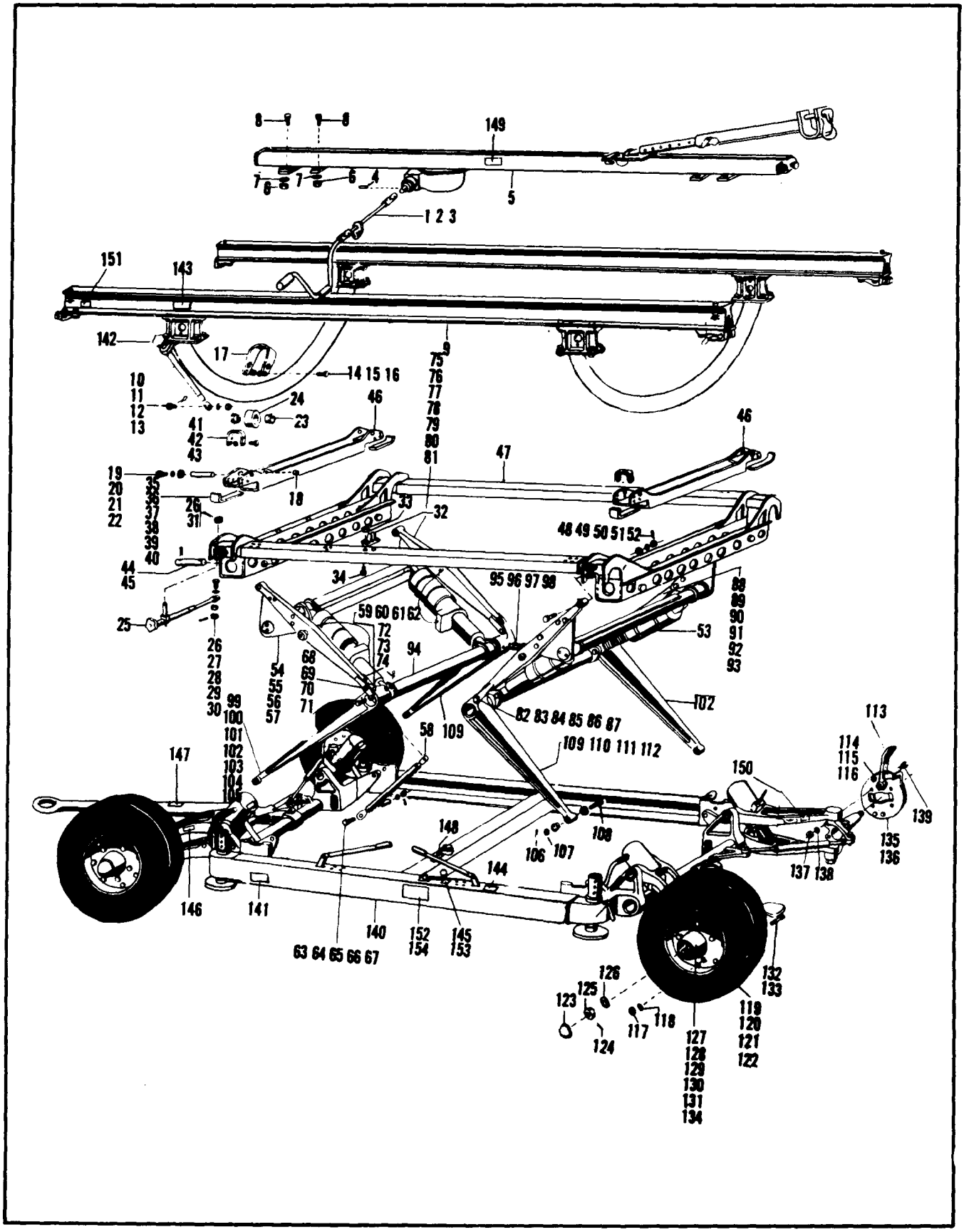
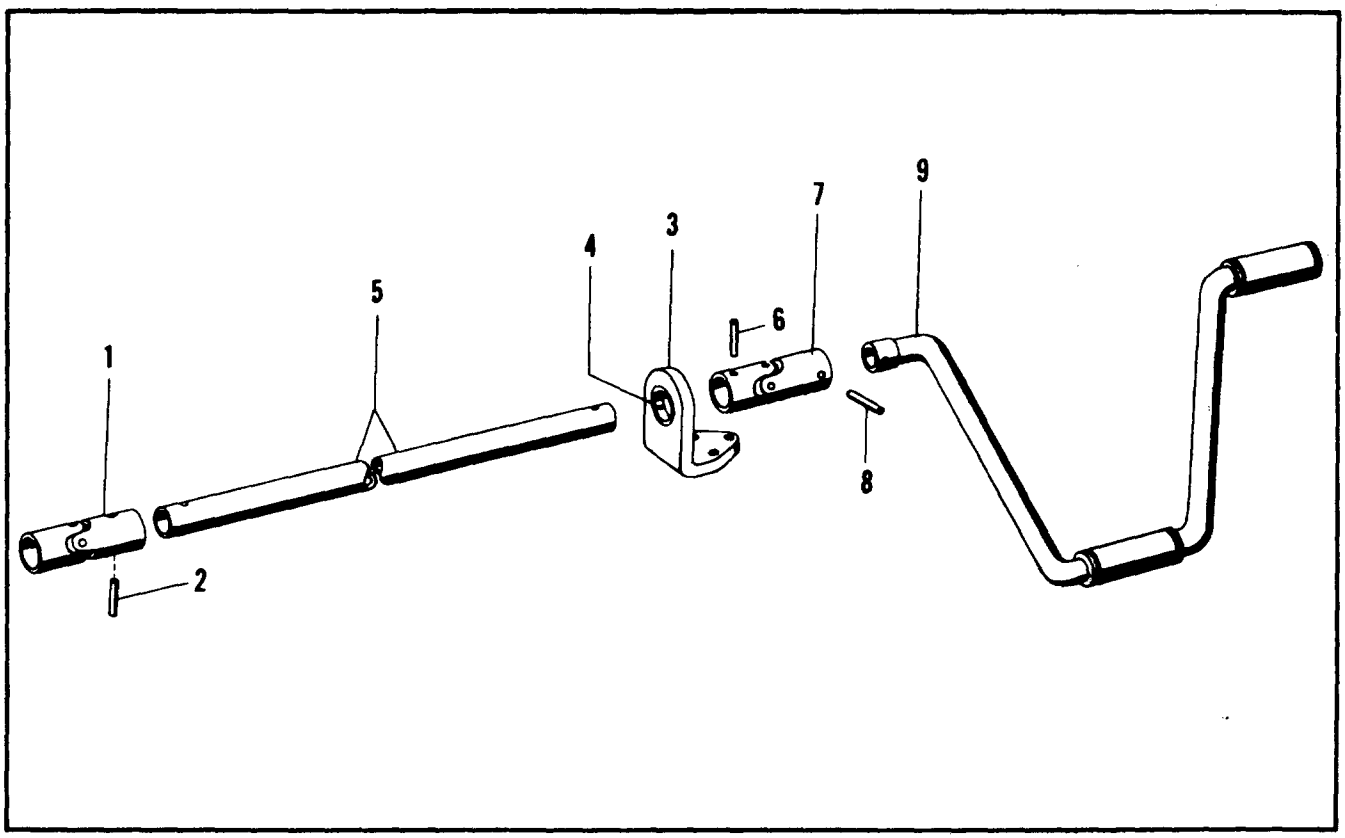


Figure 3-1. Model 4000A, Aircraft and Missile Engine Lifting Trailer

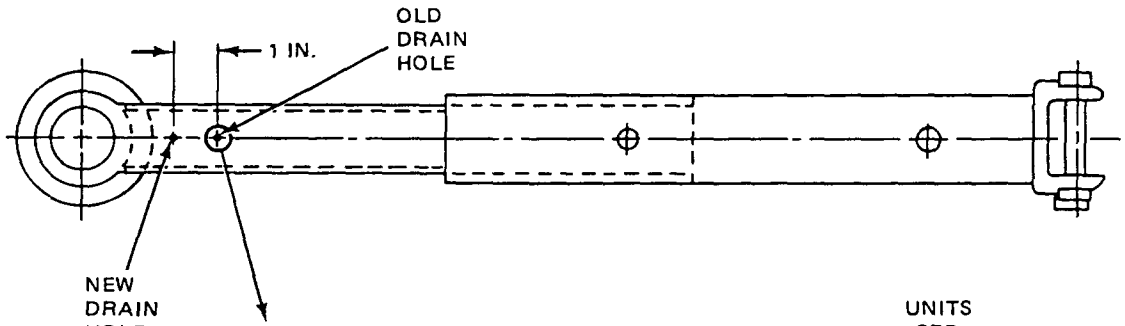
KEY TO FIGURE 3-1

1. Winch Drive Assembly
2. Nut
3. Bolt
4. Spring Pin
5. Winch Assembly
6. Nut
7. Washer
8. Bolt
9. Rail and Frame Assembly
10. Cotter Pin
11. Nut
12. Washer
13. Screw
14. Nut
15. Washer
16. Screw
17. Retaining Strap
18. Bushing
19. Screw
20. Washer
21. Washer
22. Pin
23. Bushing
24. Roller
25. Traverse Adjustment Assembly
26. Cotter Pin
27. Nut
28. Washer
29. Bolt
30. Bushing
31. Nut
32. Winch Crank Bracket
33. Nut
34. Screw
35. Cradle Retaining Strap
36. Bolt
37. Washer
38. Nut
39. Washer
40. Screw
41. Traverse Adjustment Bracket
42. Nut
43. Screw
44. Cradle Support Pin
45. Cotter Pin
46. Upper Frame Crade Assembly
47. Upper Frame Assembly
48. Cotter Pin
49. Nut
50. Washer
51. Bolt
52. Bushing
53. Hydraulic Installation
54. Tube Assembly
55. Nut
56. Washer
57. Bolt
58. Link Rod
59. Cotter Pin
60. Nut
61. Washer
62. Clevis Bolt
63. Cotter Pin
64. Nut
65. Washer
66. Bolt
67. Spacer
68. Cotter Pin
69. Nut
70. Washer
71. Bolt
72. Lubrication Fitting
73. Bearing
74. Link RH
75. Cotter Pin
76. Nut
77. Washer
78. Bolt
79. Lubrication Fitting
80. Bearing
81. Link
82. Cotter Pin
83. Nut
84. Washer
85. Bolt
86. Lubrication Fitting
87. Link
88. Cotter Pin
89. Nut
90. Washer
91. Bolt
92. Lubrication Fitting
93. Link
94. Tube Assembly
95. Nut
96. Washer
97. Bolt
98. Bolt
99. Cotter Pin
100. Washer
101. Pin
102. Link, LH fwd, RH aft
103. Lubrication Fitting
104. Bushing
105. Bushing
106. Cotter Pin
107. Washer
108. Pin
109. Link
110. Lubrication Fitting
111. Bushing
112. Bushing
113. Brake Pedal Assembly
114. Brake Sector
115. Screw
116. Washer
117. Nut
118. Washer
119. Tire
120. Tube
121. Flap
122. Wheel
123. Grease Cap
124. Cotter Pin
125. Nut
126. Washer
127. Bearing Outboard Cup
128. Bearing Outboard Cone
129. Bearing Inbound Cup
130. Bearing Inbound Cone
131. Seal
132. Bolt
133. Bolt
134. Hub
135. Brake Assembly
136. Brake Assembly
137. Nut
138. Washer
139. Bolt
140. Chassis Assembly
141. Operating Instructions Plate
142. Lubrication Instruction Plate
143. Instruction Load Plate
144. Instruction Plate
145. Instruction Caution Plate
146. Tire Inflation Instruction Plate
147. Towing Instruction Plate
148. Reservoir Instruction Plate
149. Instruction Winch Plate
150. Instruction Tie Down Plate
151. Instruction Tie Down Plate
152. Model 4000A Instruction Plate
153. Screw
154. Screw



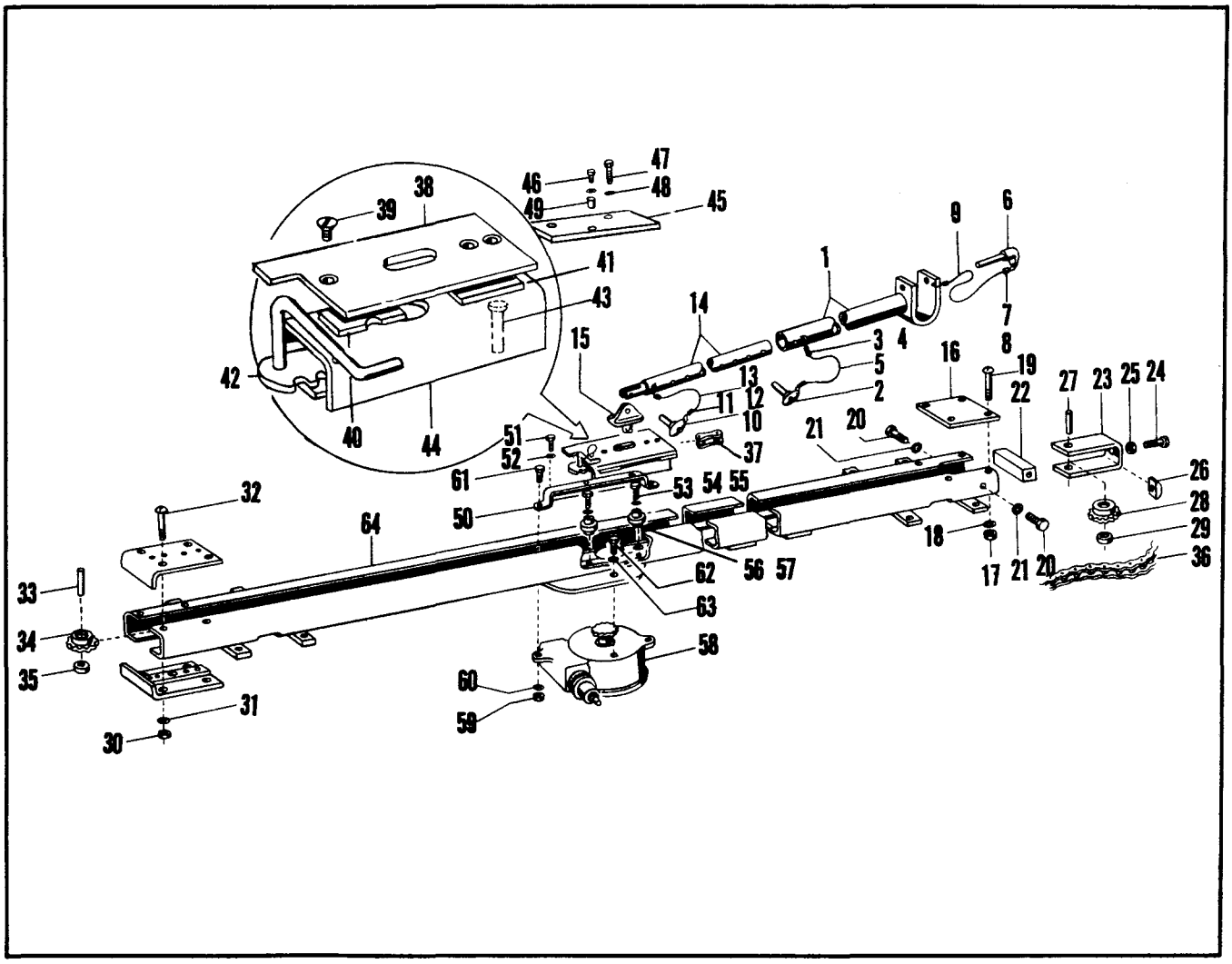
1. Universal Joint
2. Spring Pin
3. Torque Tube Bracket
4. Bushing
5. Torque Tube
6. Pin
7. Universal Joint
8. Spring Pin
9. Hand Crank

Figure 3-2. Winch Drive Assembly, Part No. 104401



PART NUMBER	DESCRIPTION	UNITS PER ASSY
DLA500-85-D050	BUMPER	1
AN4015	BOLT	1
AN364C428	NUT	1

Figure 3-2A. Rubber Bumper on Tow Bar



1. Tube
2. Quick-Release Pin
3. Cover
4. Sleeve
5. Cable
6. Quick-Release Pin
7. Cover
8. Sleeve
9. Cable
10. Quick-Release Pin
11. Cover
12. Sleeve
13. Cable
14. Tube Assembly
15. Draw-bar Fitting
16. End Cover Plate
17. Nut
18. Washer
19. Clevis Bolt
20. Bolt
21. Washer
22. Yoke Spacer
23. Take-Up Yoke
24. Adjust Bolt
25. Nut
26. Adjust Nut
27. Pin
28. End Sprocket
29. Bearing
30. Nut
31. Washer
32. Bolt
33. Pin
34. Sprocket
35. Bearing
36. Roller Chain
37. Connecting Link
38. Top Plate
39. Screw
40. Slider Guide
41. Guide
42. Comb Assembly
43. Pivot Pin
44. Bottom Plate Assembly
45. Ratio Box Cover
46. Bolt
47. Bolt
48. Washer
49. Spacer
50. Idler Bracket
51. Bolt
52. Washer
53. Bolt
54. Washer
55. Washer
56. Idler
57. Bearing
58. Speed Decreaser Gear Assembly
59. Nut
60. Washer
61. Bolt
62. Bolt
63. Washer
64. Rail Assembly

Figure 3-3. Winch Assembly

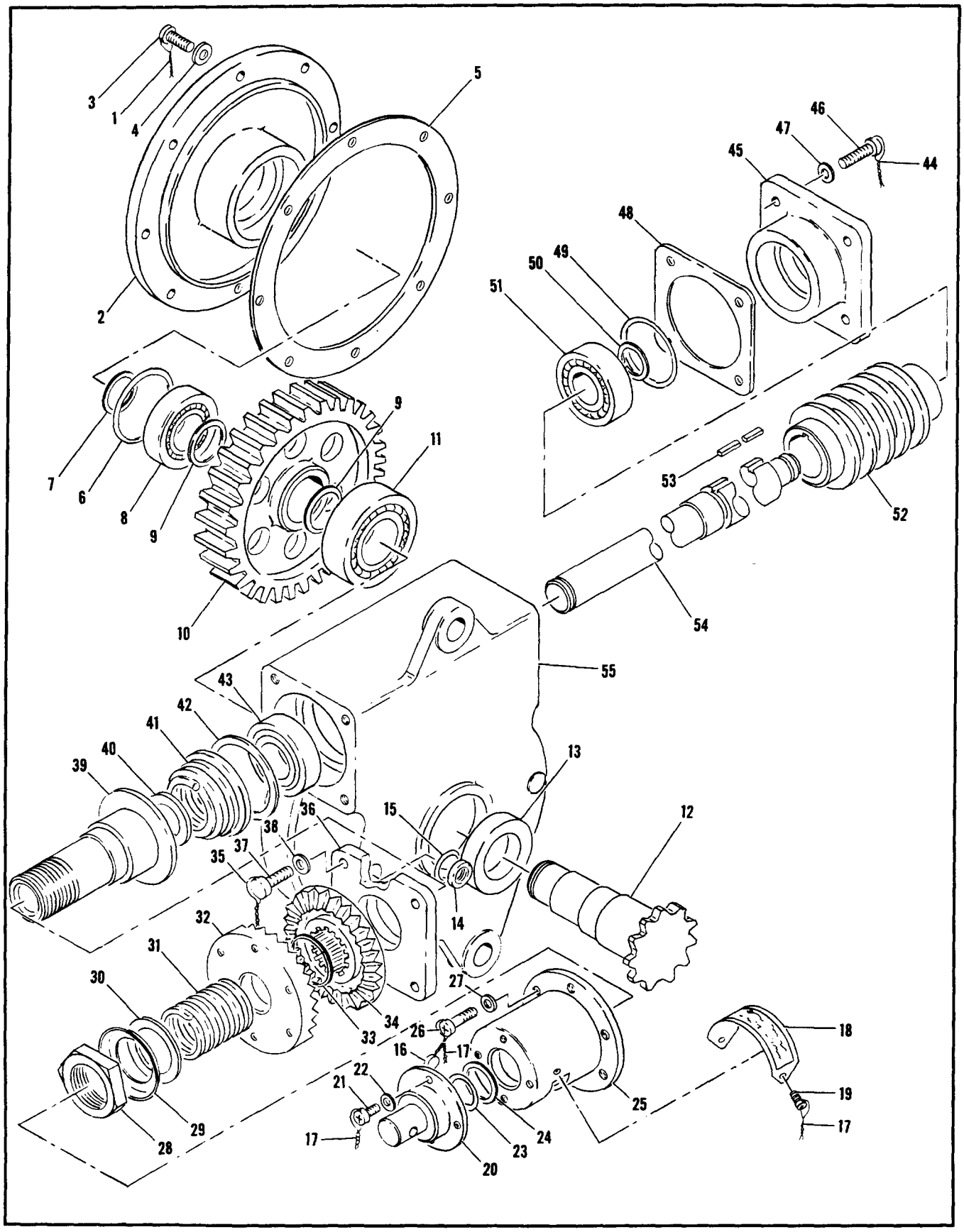
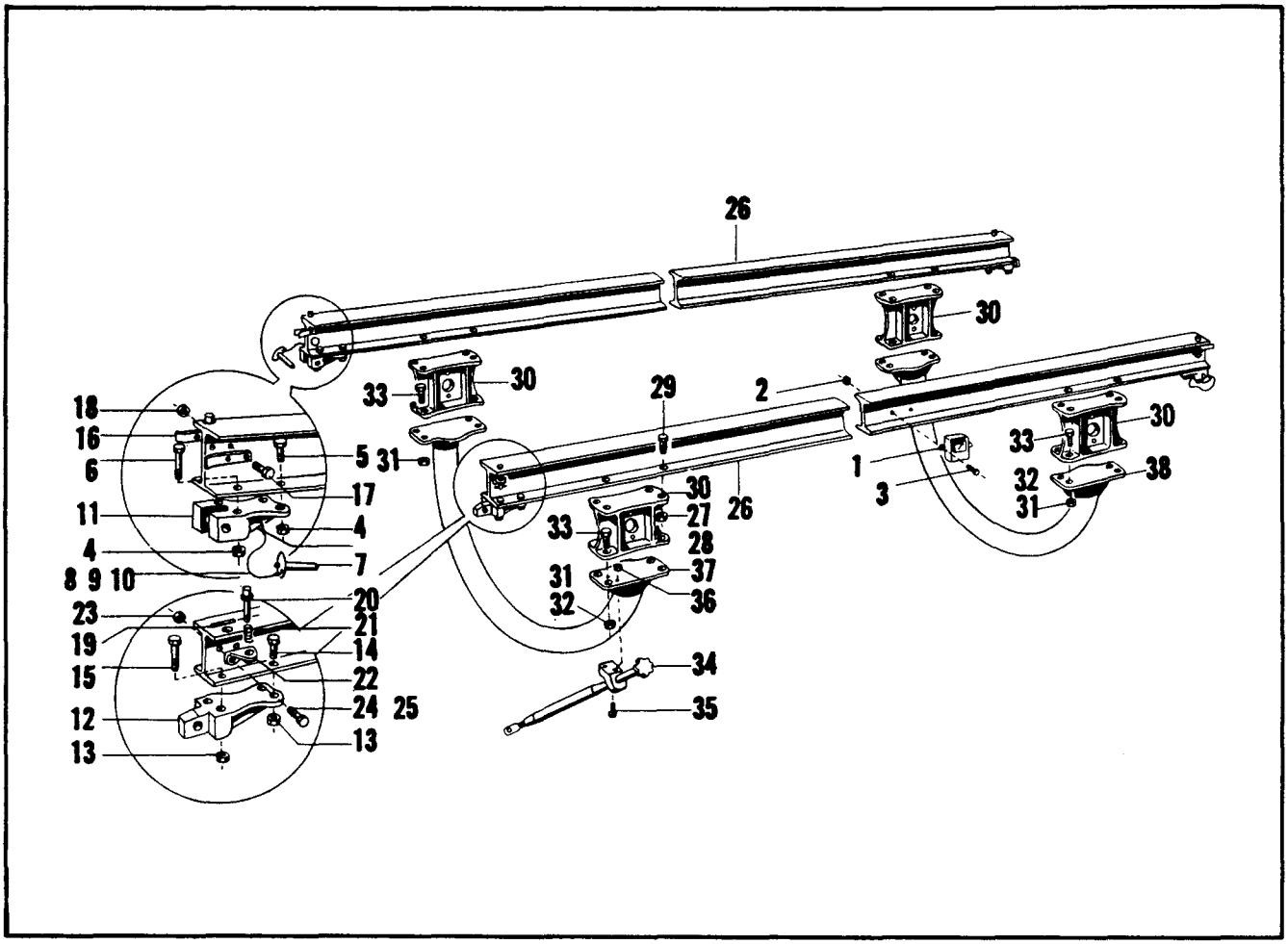


Figure 3-4. Speed Decreaser Gear Box Assembly

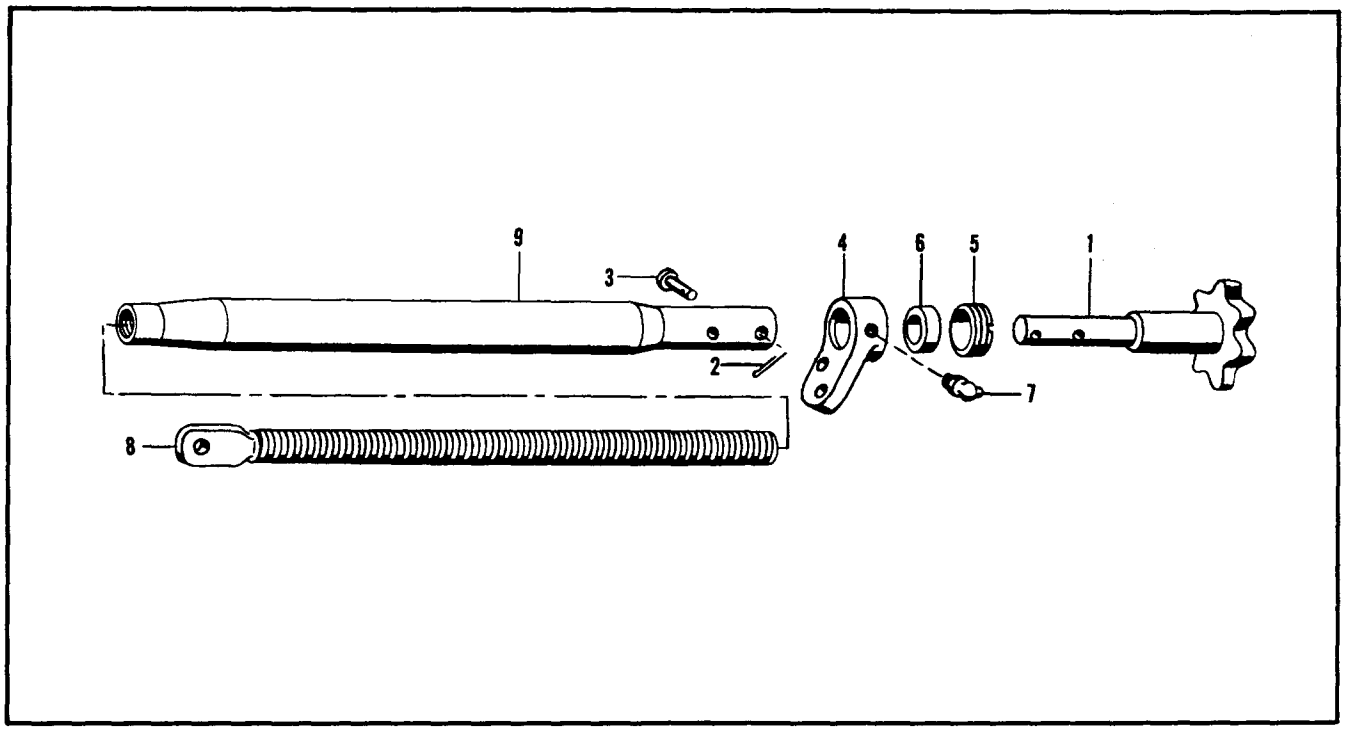
KEY TO FIGURE 3-4

1. Wire
2. Cover
3. Screw
4. Washer
5. Gasket
6. Spacer
7. Snap Ring
8. Ball Bearing
9. Spacer
10. Gear
11. Ball Bearing
12. Shaft
13. Seal
14. Insert
15. Lock Ring
16. Lead Seal
17. Wire
18. Name Plate
19. Screw
20. Extension
21. Screw
22. Lockwasher
23. Snap Ring
24. Washer
25. Cover
26. Screw
27. Lockwasher
28. Locknut
29. Lockwasher
30. Washer
31. Spring
32. Ring
33. Snap Ring
34. Clutch
35. Wire
36. Plate
37. Screw
38. Washer
39. Disc
40. Washer
41. Spring
42. Snap Ring
43. Ball Bearing
44. Wire
45. Retainer
46. Screw
47. Washer
48. Gasket
49. Spacer
50. Snap Ring
51. Ball Bearing
52. Worm
53. Key
54. Shaft
55. Housing



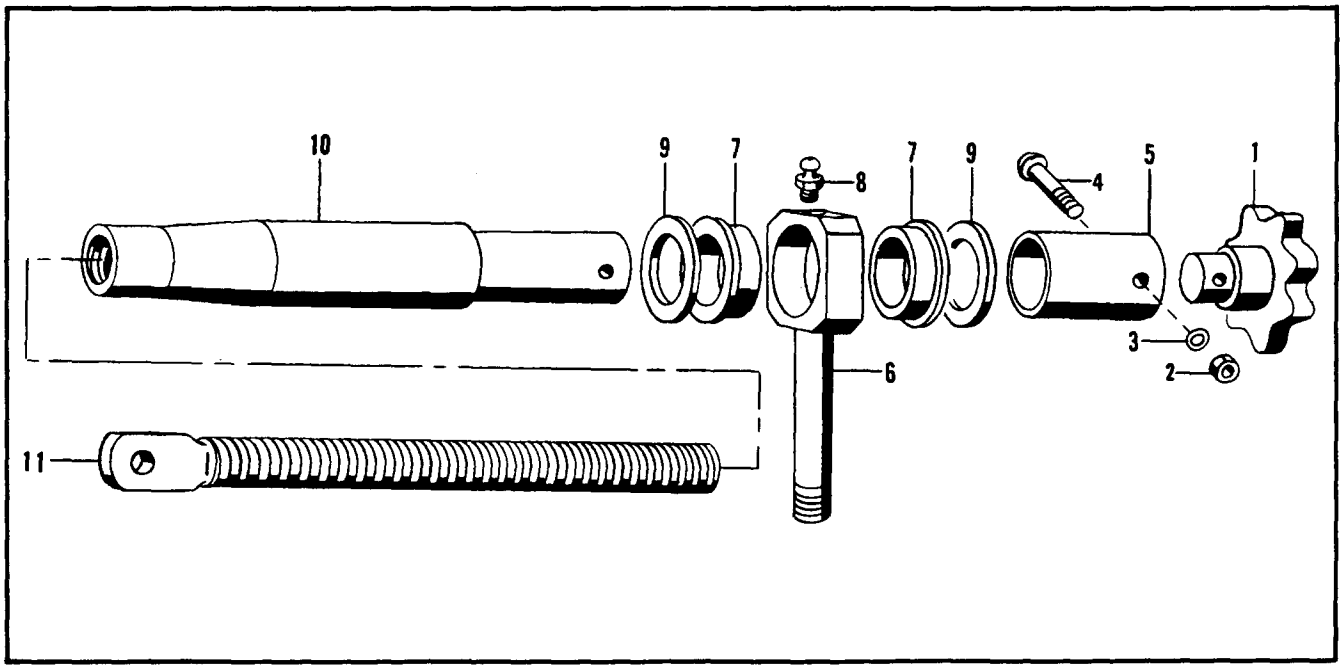
1. **Tilt Indicator**
2. Nut
3. **Screw**
4. **Nut**
5. Bolt
6. Bolt
7. Quick-Release Pin
8. Cover
9. Sleeve
10. Cable
11. Female Coupling
12. Male Coupling
13. Nut
14. Bolt
15. Bolt
16. Rail Guide Clip
17. Nut
18. Bolt
19. Spring Pin
20. Adapter Stop Pin
21. Stop Spring
22. Stop Bracket
23. Nut
24. Bolt
25. Washer
26. Transfer Rail Beam
27. Nut
28. Washer
29. Bolt
30. Rail Spacer Block
31. Nut
32. Washer
33. Bolt
34. Rotation Adjustment Assembly
35. Screw
36. Nut
37. Tube Assembly, Fwd
38. Tube Assembly, Aft

Figure 3-5. Frame and Transfer Rail Assembly



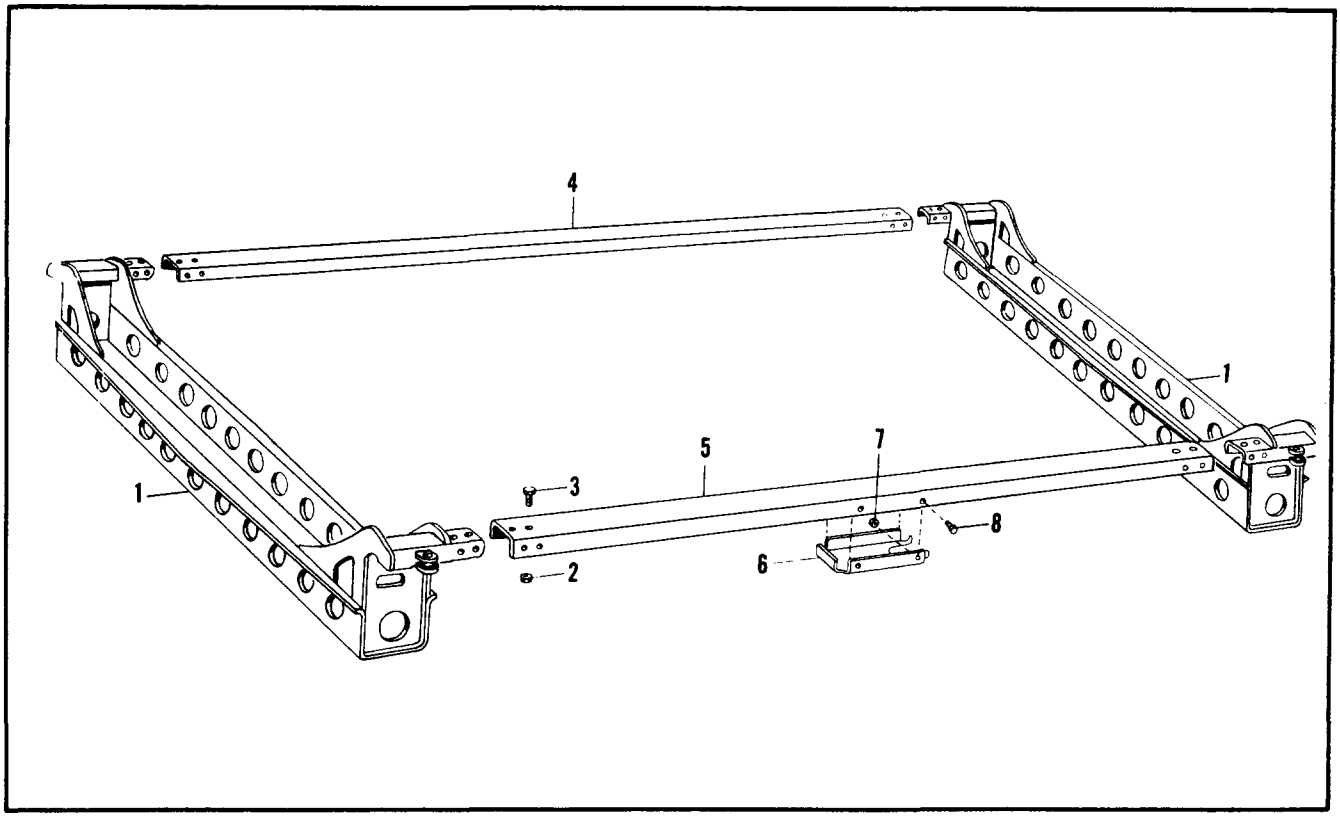
1. Knob
2. Cotter Pin
3. Pin
4. Bracket
5. Nut
6. Bearing
7. Lubrication Fitting
8. Screw
9. Tube

Figure 3-6. Rotation Adjustment Assembly



1. Knob
2. Nut
3. Washer
4. Bolt
5. Spacer
6. Eyebolt
7. Bushing
8. Lubrication Fitting
9. Washer
10. Tube
11. Screw

Figure 3-7. Traverse Adjustment Assembly



1. Channel Assembly
2. Nut
3. Bolt
4. Side Channel RH
5. Side Channel LH
6. Bracket
7. Nut
8. Screw

Figure 3-8. Upper Frame Assembly

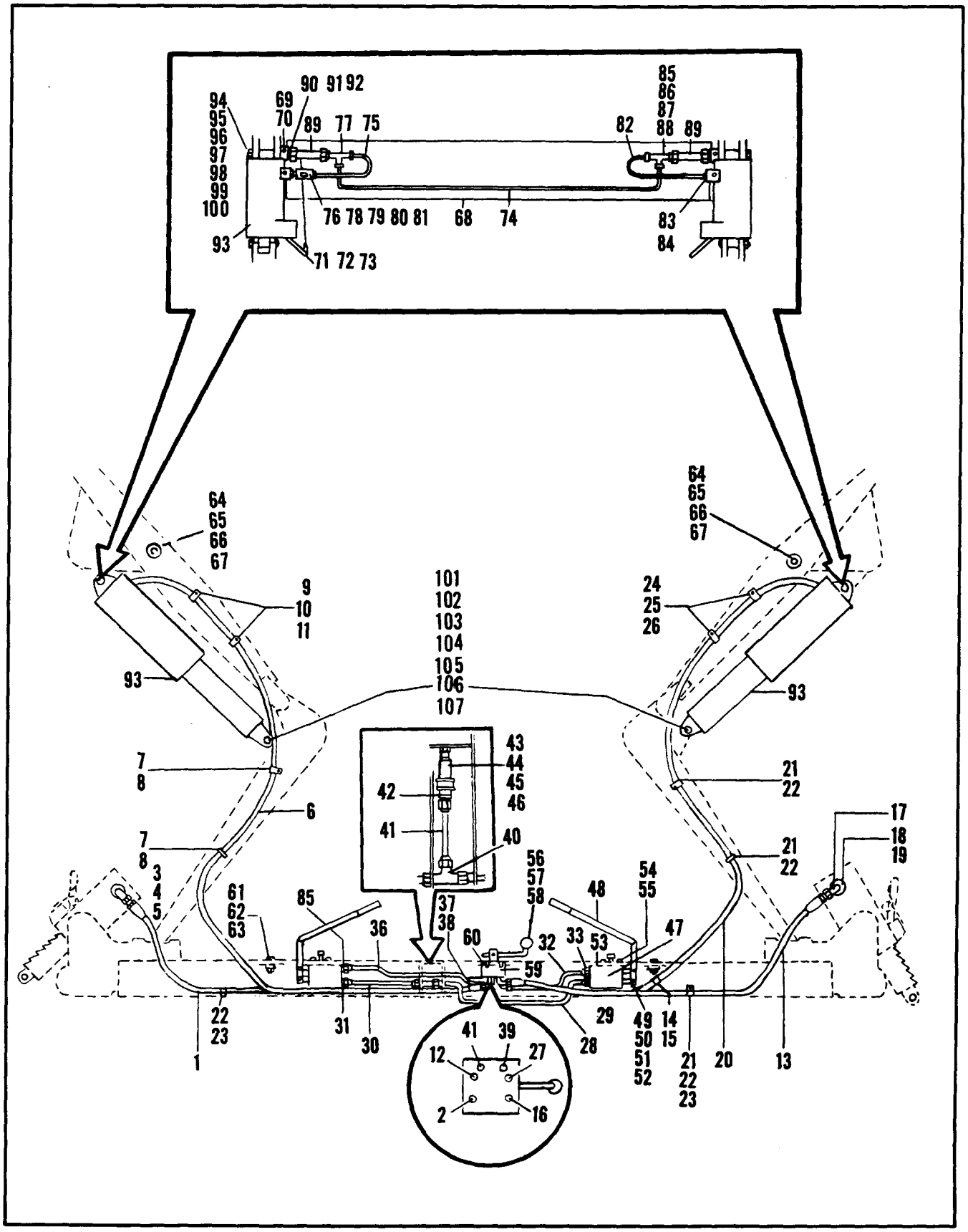


Figure 3-9. Hydraulic Installation

KEY TO FIGURE 3-9.

1. Hose Assembly
2. Elbow
3. Elbow
4. Bushing
5. Plug
6. Hose Assembly
7. Tube
8. Clamp
9. Nut
10. Clamp
11. Screw
12. Clamp
13. Screw
14. Washer
15. Elbow
16. Hose Assembly
17. Clamp
18. Screw
19. Nipple
20. Elbow
21. Bushing
22. Plug
23. Hose Assembly
24. Rubber Tube
25. Clamp
26. Nut
27. Clamp
28. Screw
29. Screw
30. Clamp
31. Screw
32. Washer
33. Nipple
34. Tube Assembly
35. Elbow
36. Tube Assembly
37. Nipple
38. Tube Assembly
39. Nipple
40. Relief Valve
41. Elbow
42. Tube Assembly
43. Relief Valve
44. Nipple
45. Elbow
46. Tee
47. Tube Assembly
48. Union
49. Gasket
50. Filter
51. Gasket
52. Nipple
53. Pump Assembly
54. Screw
55. Washer
56. Spring Pin
57. Ball
58. Selector Valve Handle
59. Selector Valve Assembly
60. Screw
61. Stop
62. Screw
63. Nut
64. Screw
65. Knob
66. Guide
67. Retaining Ring
68. Bracket
69. Bracket
70. Cover Assembly
71. Screw
72. Washer
73. Cotter Pin
74. Washer
75. Pin
76. Tube Assembly
77. Tube Assembly
78. Tee
79. Tee
80. Cap Assembly
81. Elbow
82. Nut
83. Gasket
84. Ring
85. Tube Assembly
86. Union
87. Gasket
88. Tee
89. Cap Assembly
90. Gasket
91. Ring
92. Nut
93. Cylinder Assembly
94. Fitting
95. Pin
96. Cotter Pin
97. Nut
98. Washer
99. Cotter Pin
100. Nut
101. Washer
102. Bolt
103. Bushing
104. Hose Assembly
105. Clamp
106. Elbow
107. Bushing

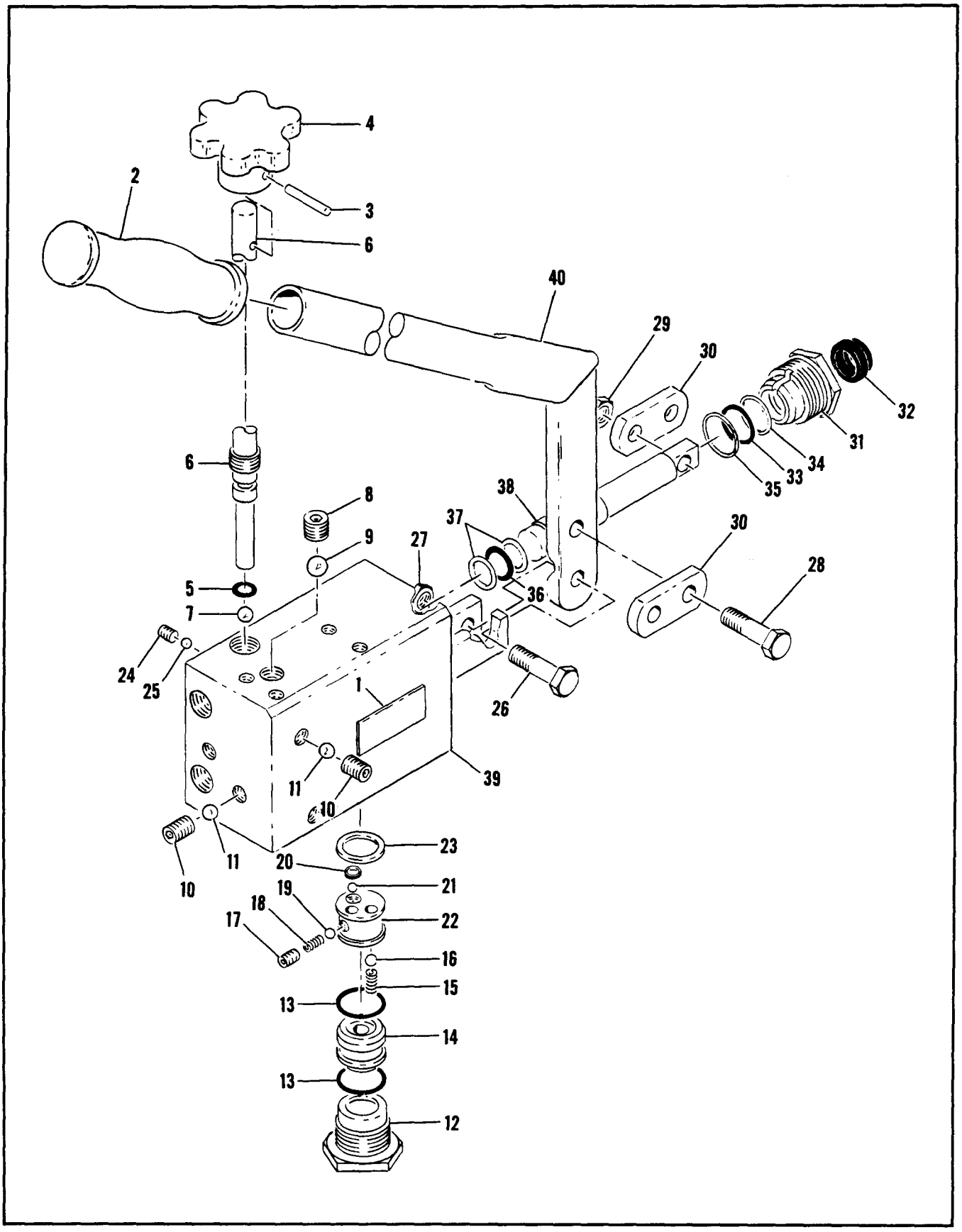
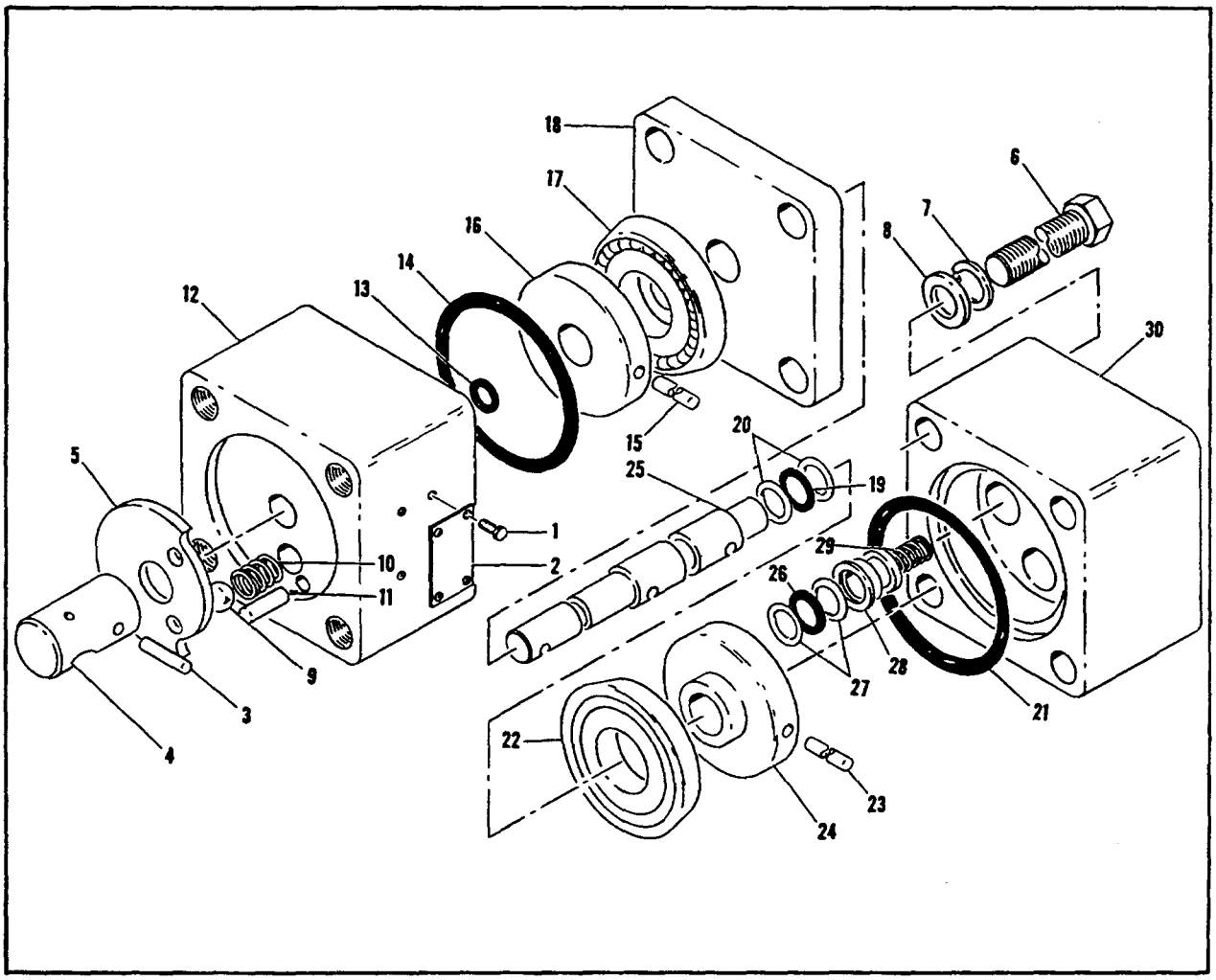


Figure 3-10. Hand Driven Reciprocating Pump Assembly L.H. & R.H.

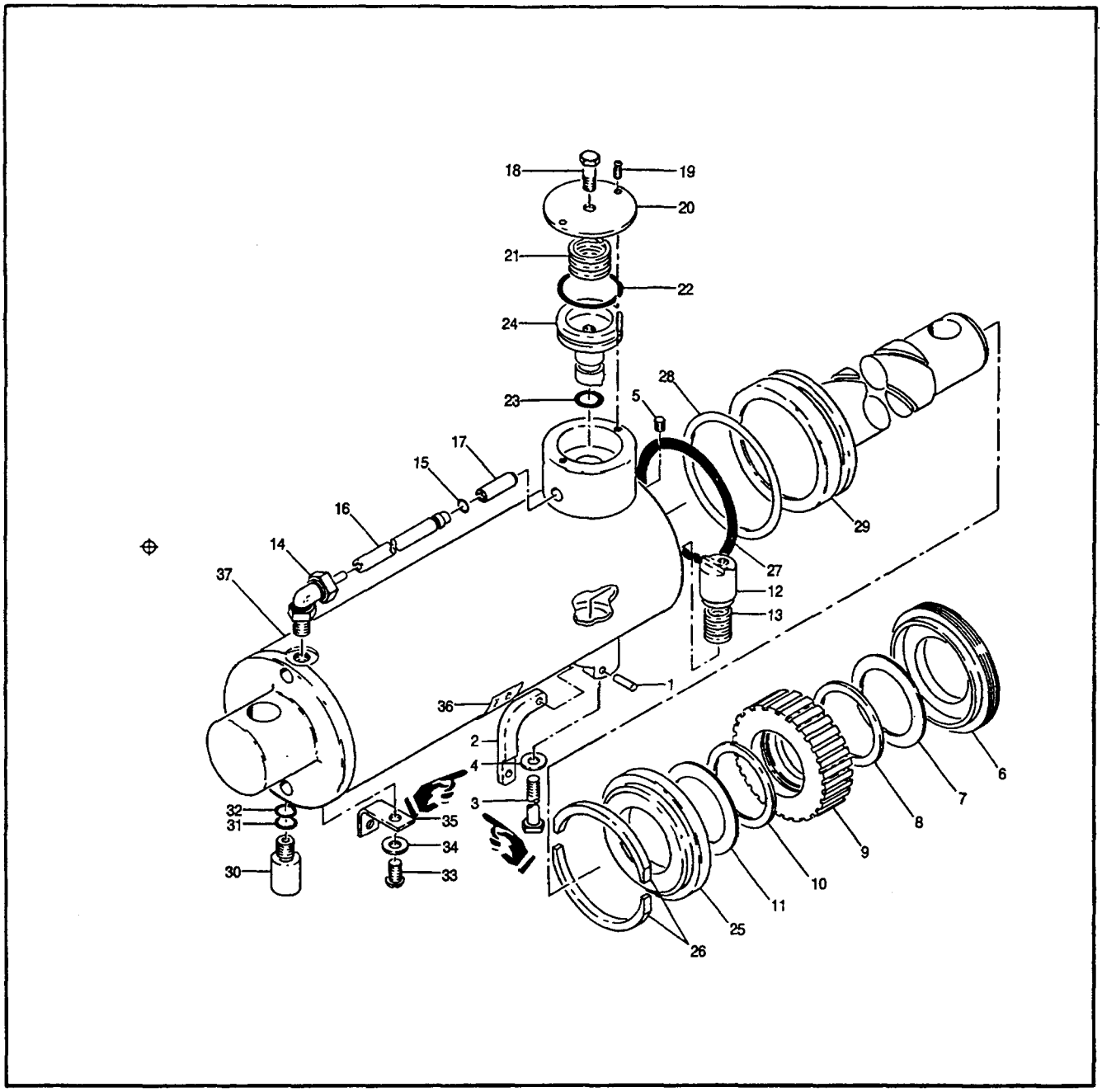
KEY TO FIGURE 3-10.

1. Identification Plate
2. Grip
3. Pin
4. Knob
5. Packing
6. Stem
7. Ball
8. Set Screw
9. Ball
10. Set Screw
11. Ball
12. Plug
13. Packing
14. Plug
15. Spring
16. Ball
17. Set Screw
18. Spring
19. Ball
20. Ring
21. Ball
22. Body
23. Gasket
24. Set Screw
25. Ball
26. Bolt
27. Nut
28. Bolt
29. Nut
30. Connecting Link
31. Bushing
32. Scrapper
33. Packing
34. Backup
35. Packing
36. Packing
37. Backup
38. Piston
39. Housing
40. Handle



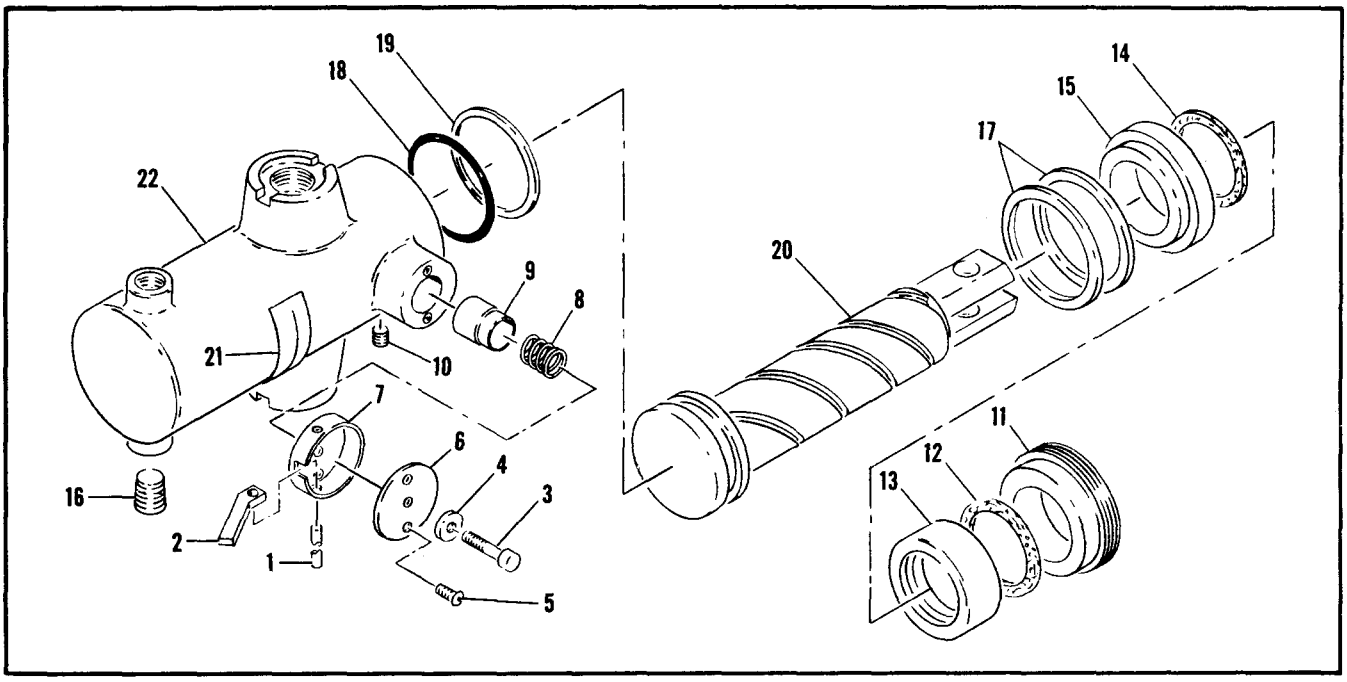
1. Nameplate
2. Screw
3. Pin
4. Sleeve
5. Disc
6. Screw
7. Washer
8. Washer
9. Ball
10. Spring
11. Pin
12. Body
13. "O" Ring
14. "O" Ring
15. Pin
16. Rotor
17. Bearing
18. Plate
19. "O" Ring
20. Backup Ring
21. "O" Ring
22. Bearing
23. Pin
24. Rotor
25. Shaft
26. "O" Ring
27. Backup Ring
28. Shear Seal
29. Spring
30. Body

Figure 3-11. Selector Valve Assembly



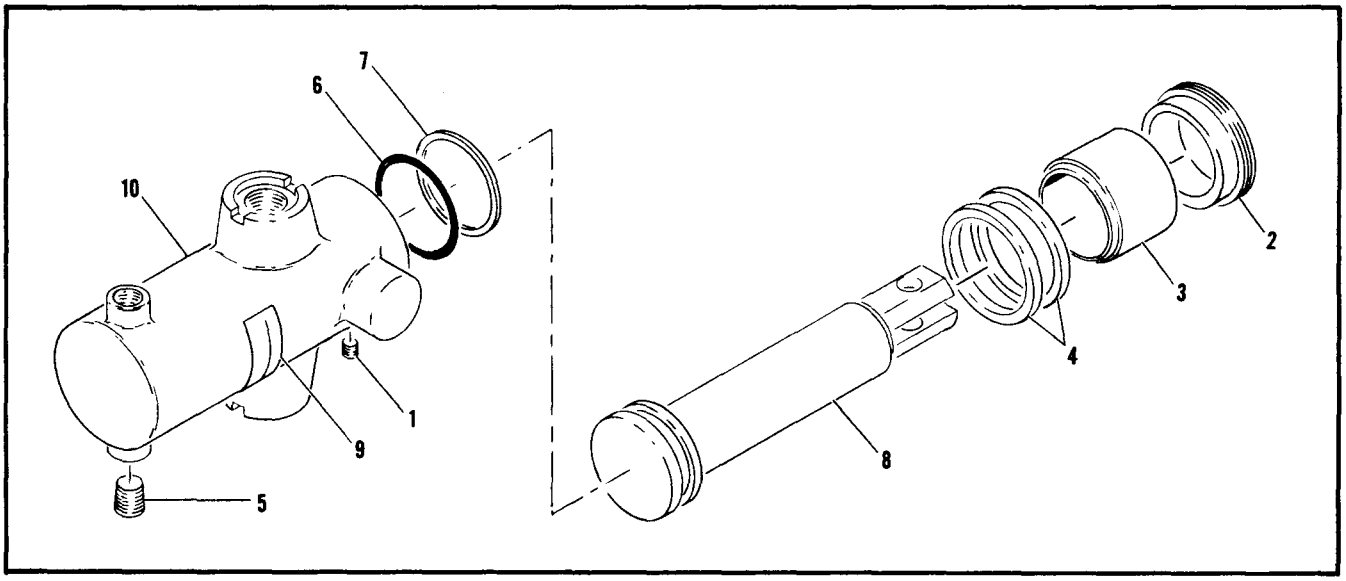
1. Pin
2. Lever
3. Screw
4. Washer
5. Set Screw
6. Bushing
7. Washer
8. Washer
9. Nut
10. Washer
11. Washer
12. Piston
13. Spring
14. Fitting
15. Packing
16. Tube
17. Pin
18. Screw
19. Screw
20. Cover
21. Spring
22. Packing
23. Packing
24. Piston
25. Stop
26. Ring
27. Packing
28. Backup Ring
29. Ram
30. Adapter
31. Packing
32. Backup Ring
33. Screw
34. Washer
35. Bracket
36. Plate
37. Cylinder

Figure 3-12. Frame Lift Cylinder Assembly



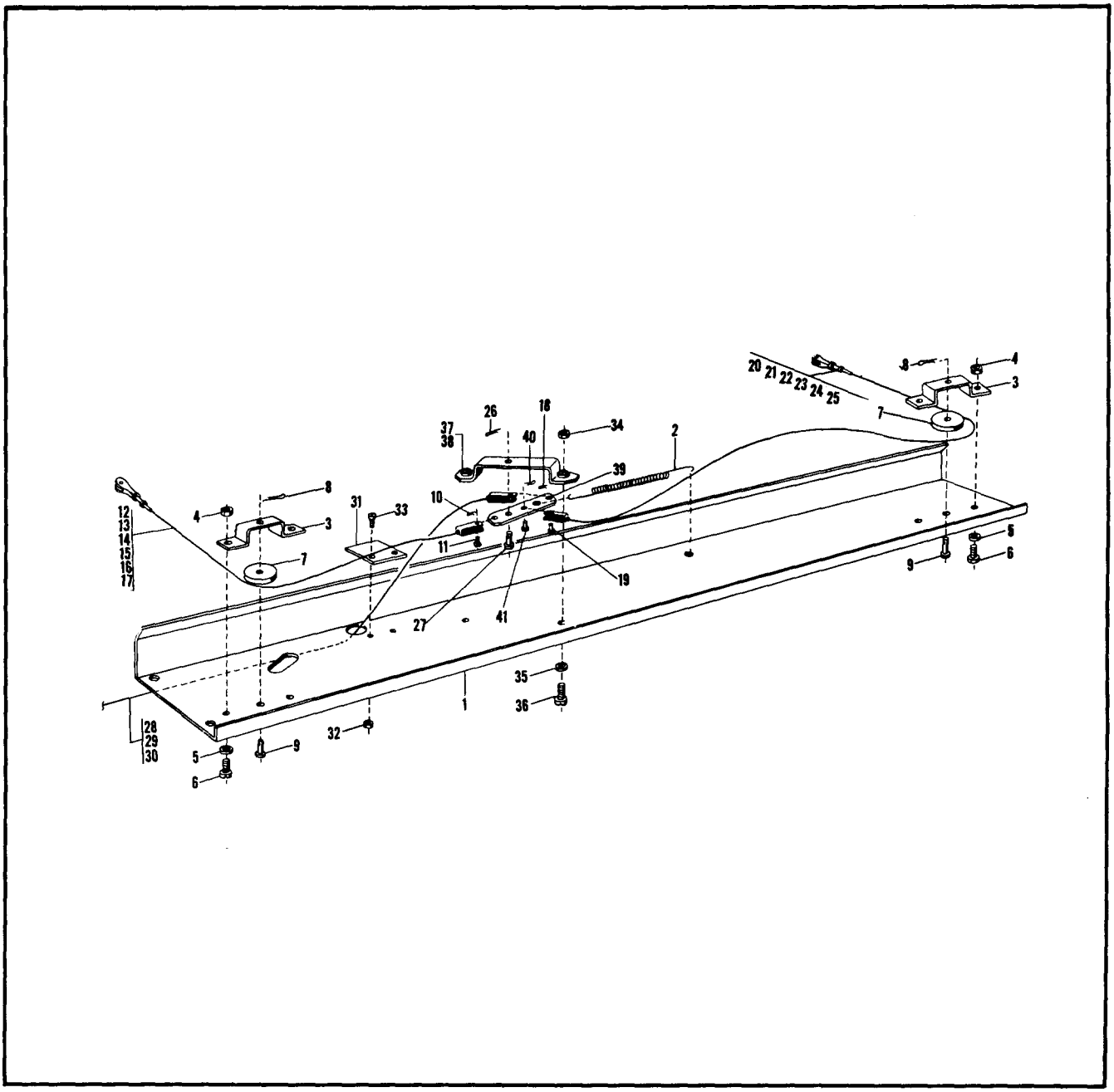
1. Pin Spring
2. Lever
3. Screw
4. Washer
5. Screw
6. Spring
7. Cylinder Cap
8. Spring
9. Lock Piston
10. Set Screw
11. Bushing
12. Washer
13. Ram Nut
14. Washer
15. Stop
16. Pipe Plug
17. Ring
18. Packing
19. Backup Ring
20. Ram
21. Plate
22. Cylinder

Figure 3-13. L.H. Linear Actuating Cylinder



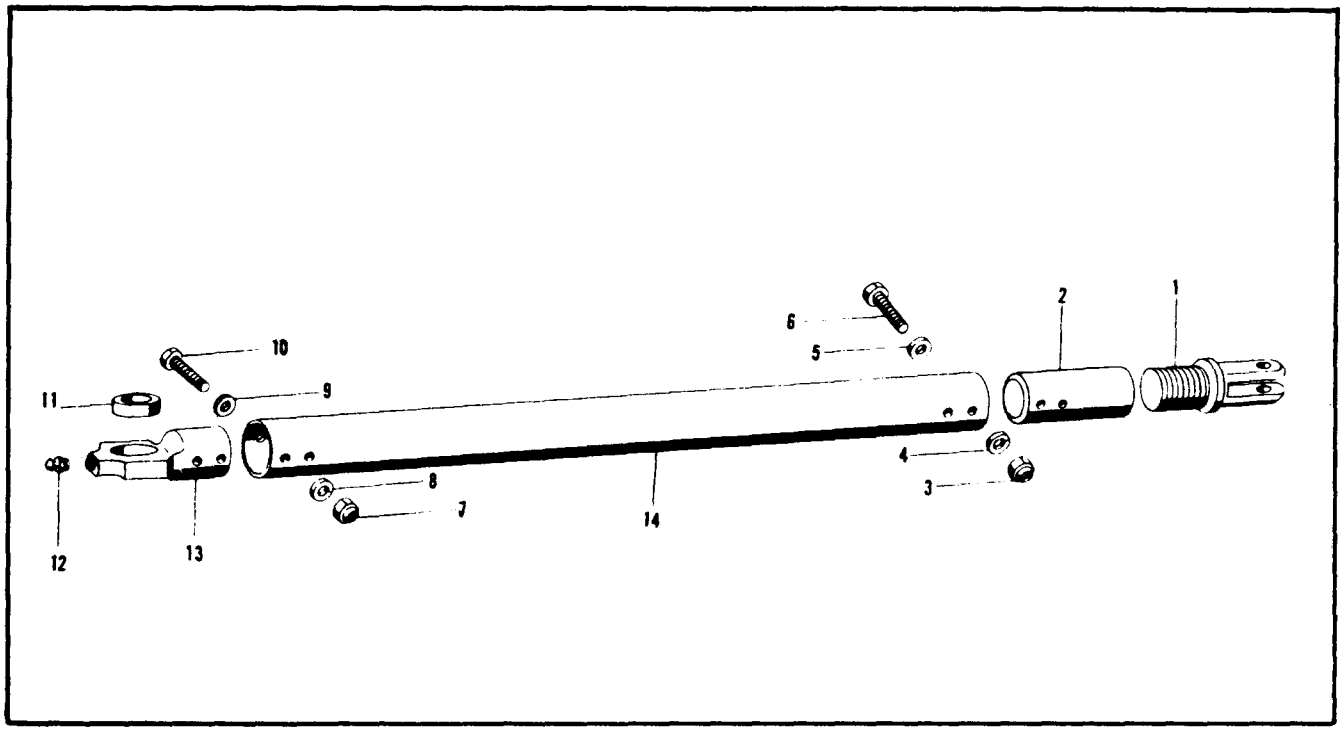
1. Screw
2. Bushing
3. Spacer
4. Ring
5. Pipe Plug
6. Packing
7. Packing
8. Ram
9. Identification Plate
10. Cylinder

Figure 3-14. R.H. Linear Actuating Cylinder



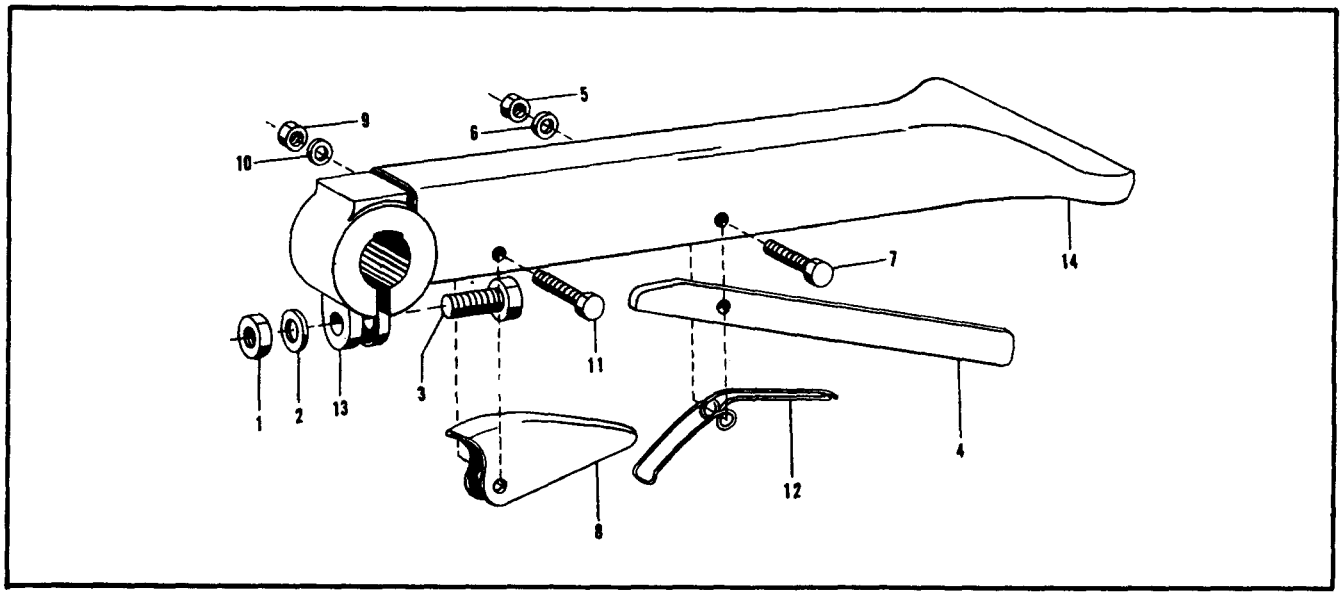
1. Channel
2. Spring
3. Bracket
4. Nut
5. Washer
6. Screw
7. Pulley
8. Cotter Pin
9. Pin
10. Cotter Pin
11. Pin
12. Clevis
13. Nut
14. Terminal
15. Terminal
16. Clevis
17. Cable
18. Cotter Pin
19. Pin
20. Clevis
21. Nut
22. Terminal
23. Terminal
24. Clevis
25. Cable
26. Cotter Pin
27. Pin
28. Clevis
29. Cable
30. Terminal
31. Strip
32. Nut
33. Screw
34. Nut
35. Washer
36. Screw
37. Bracket
38. Nut
39. Release Lever
40. Cotter Pin
41. Pin

Figure 3-15. Hydraulic Lines Support Cover Assembly



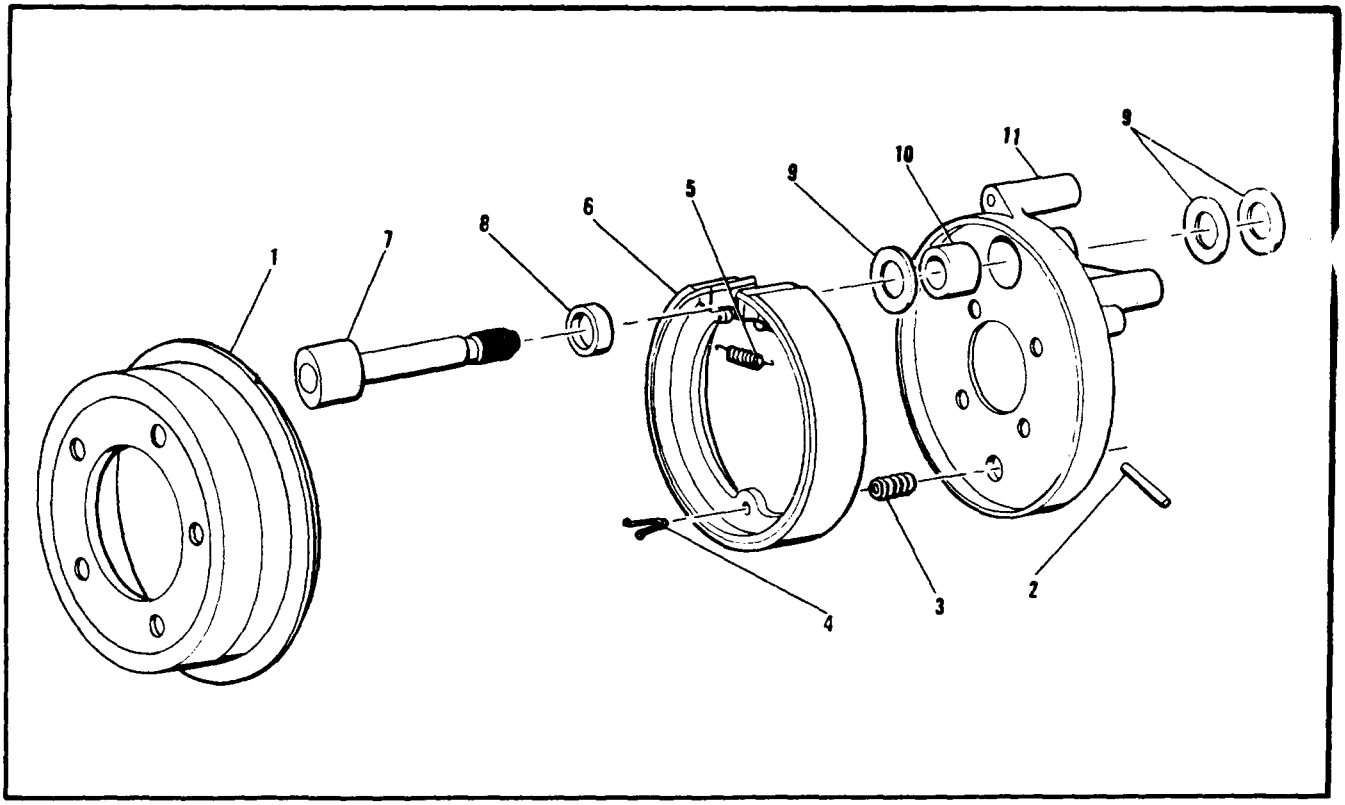
1. Rod End Clevis
2. Sleeve
3. Nut
4. Washer
5. Washer
6. Bolt
7. Nut
8. Washer
9. Washer
10. Bolt
11. Bearing
12. Lubrication Fitting
13. Rod End Connector
14. Tube

Figure 3-16. Connecting Rod



1. Nut
2. Washer
3. Bolt
4. Lever
5. Nut
6. Washer
7. Bolt
8. Pawl
9. Nut
10. Washer
11. Bolt
12. Brake Pawl Spring
13. Pedal Assembly

Figure 3-17. Brake Pedal Assembly



1. Brake Drum
2. Spring Pin
3. Clip
4. Spring
5. Spring
6. Brake Shoe and Lining
7. Camshaft
8. Spacer
9. Washer
10. Bearing
11. Mounting Plate

Figure 3-18. Brake Assembly

KEY TO FIGURE 3-19.

1. Cover
2. Sleeve
3. Cable
4. Lock Spring
5. Ring
6. Pin
7. Towbar Pin
8. Safety Pin
9. Sleeve
10. Cable
11. Tube Assembly
12. Drawbar Pivot Link
13. Cotter Pin
14. Nut
15. Washer
16. Bolt
17. Nut
18. Washer
19. Bolt
20. Bushing
21. Drawbar Pivot Fitting
22. Retaining Ring
23. Drawbar Pivot Pin
24. Steering Tierod
25. Cotter Pin
26. Nut
27. Steering Crank
28. Cotter Pin
29. Nut
30. Screw
31. Bolt
32. 90° Turn Fitting
33. Cotter Pin
34. Nut
35. Washer
36. Bolt
37. Towing Pintle Assembly
38. Nut
39. Washer
40. Bolt
41. Wheel Spindle
42. Nut
43. Washer
44. Bolt
45. Retainer
46. Washer
47. Ball Stud
48. Cotter Pin
49. Nut
50. Washer
51. Steering Arm
52. Nut
53. Washer
54. Bolt
55. Plug
56. Bolt
57. Spacer
58. Lubrication Fitting
59. Bushing
60. Insert
61. Upper Arm
62. Nut
63. Bolt
64. Lower Arm Fitting
65. Bushing
66. Insert
67. Lubrication Fitting
68. Lubrication Fitting
69. Linear Actuating Cylinder
70. Cotter Pin
71. Washer
72. Pin
73. Torque Tube
74. Foot Assembly
75. Quick-Release Pin
76. Cover
77. Sleeve
78. Cable
79. Main Frame Assembly

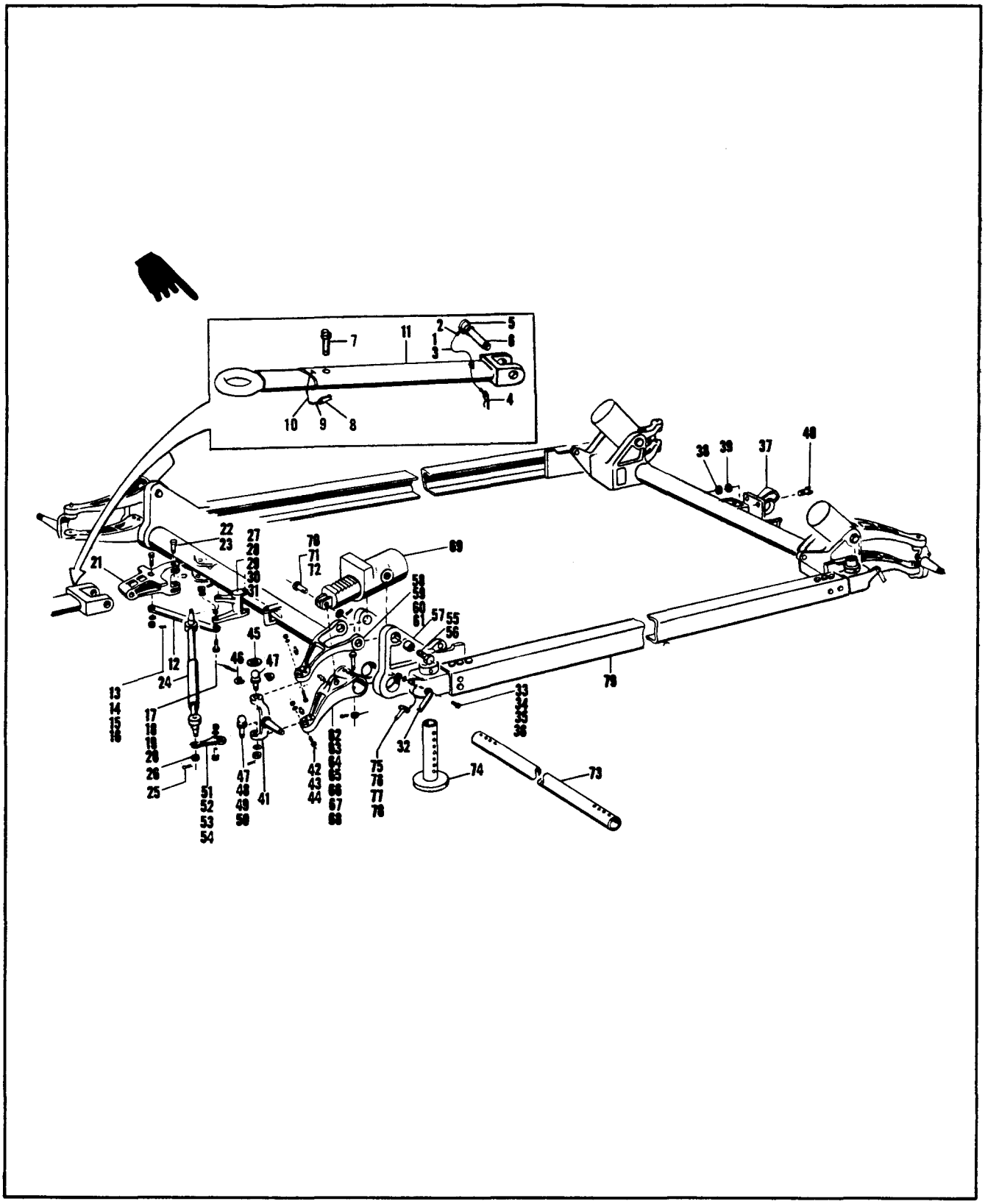
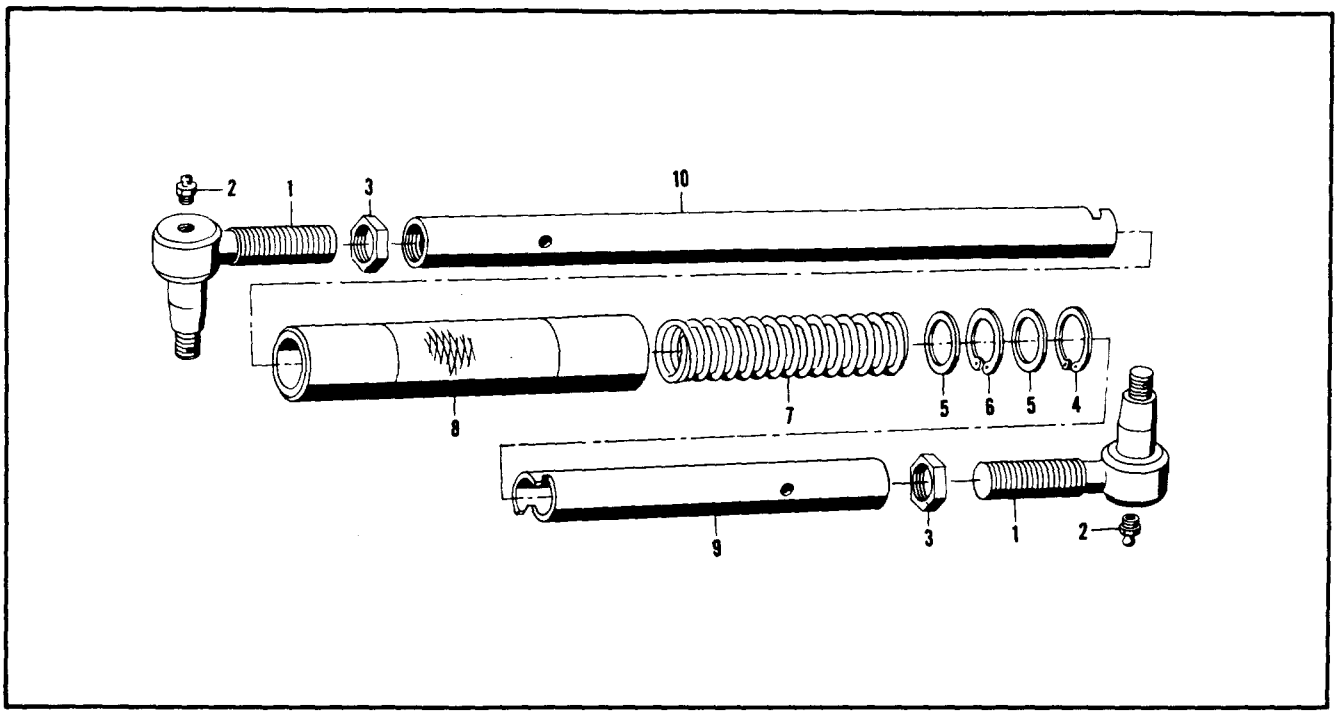
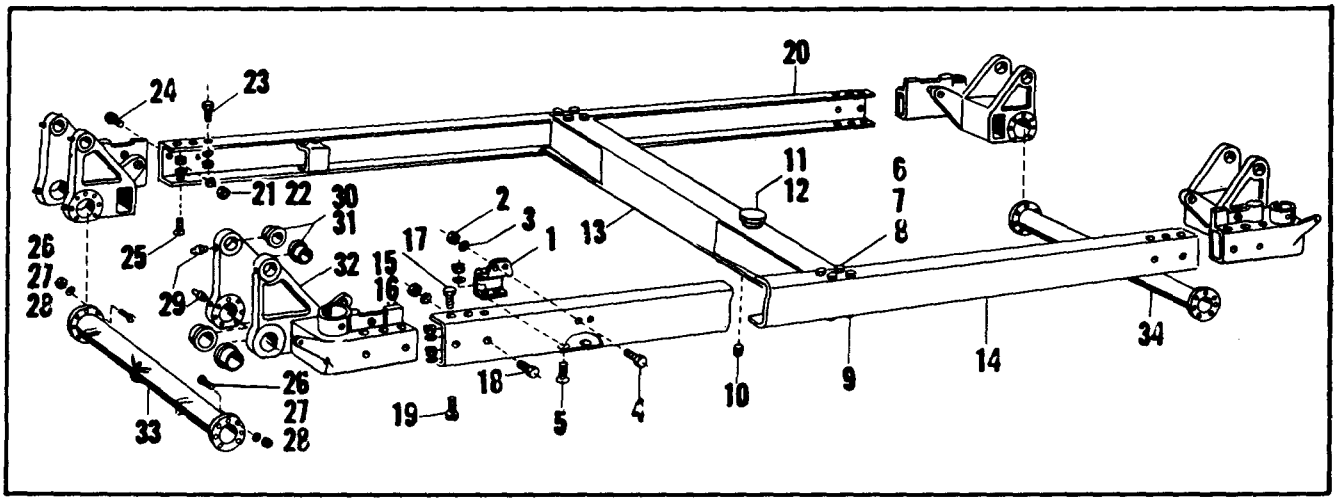


Figure 3-19. Chassis Assembly



1. Steering Tierod End
2. Lubrication Fitting
3. Check Nut
4. Retainer Ring
5. Washer
6. Retainer Ring
7. Spring
8. Sleeve
9. Outboard Rod
10. Inboard Rod

Figure 3-20. Steering Tierod Assembly



1. Bracket
2. Nut
3. Washer
4. Bolt
5. Screw
6. Nut
7. Washer
8. Bolt
9. Screw
10. Drain Plug
11. Cap Assembly
12. Strainer
13. Oil Tank
14. LH Side Channel
15. Nut
16. Washer
17. Bolt
18. Bolt
19. Screw
20. RH Side Channel
21. Nut
22. Washer
23. Bolt
24. Bolt
25. Screw
26. Nut
27. Washer
28. Screw
29. Lubrication Fitting
30. Bushing
31. Bushing
32. Fitting
33. Fwd Tube Assembly
34. Aft Tube Assembly

Figure 3-21. Main Frame Assembly

DESCRIPTION	FIG & INDEX NO.	MATING PART DESCRIPTION	FIG & INDEX NO.	MAXIMUM CLEARANCE
FITTING, Lower Arm	3-21, 33	PIN, Roller	3-21, 28	0.015 Max
BUSHING, Lower Lift Link	3-21, 30	PIN, Lower Link Pivot	3-21, 28	0.008 Max
BUSHING, Lower Lift Link	3-21, 31	BOLT BOLT	3-21, 29	0.008 Max
BUSHING, Steering Crank	3-19, 27	BOLT	3-21, 29	0.005 Max
BUSHING, Upper Arm Wheel Support	3-19, 59	BOLT, Upper Arm Wheel Support	3-19, 56	0.008 Max
BUSHING, Upper Arm Wheel Support	3-19, 59	SPACER, Upper Arm Wheel Support	3-19, 57	0.008 Max
INSERT, Wheel Arm Upper	3-19, 61	BALL, Wheel Spindle	3-19, 47	0.005 Max
BUSHING, Wheel Arm to Ram Attach	3-19, 65	PIN, Wheel Arm to Ram Attach	3-19, 59	0.010 Max
BUSHING, Main Frame Corner Fitting - Lower	3-19, 64	TUBE, Torque	3-19, 73	0.010 Max
BUSHING, Main Frame Corner Fitting - Lower	3-19, 64	PIN, Upper Arm Wheel	3-19, 72	0.008 Max
BUSHING, Main Frame Corner Fitting - Lower	3-19, 64	SPACER, Upper Arm Wheel Support	3-19, 57	0.008 Max

Figure 3-22. Table of Fits and Clearances

3-34. TEST AFTER ASSEMBLY. (See figures 3-23 and 3-24.)

3-35. Conduct Hydraulic System Tests as follows:

NOTE

LIFT TEST must be conducted on both ends of the trailer.

a. Lift Test. (See figure 3-23.)

1. Adjust trailer rails to a medium level height.
2. Attach chain (8000 lb. min. capacity) to the tie-down hole in one rail at end to be tested, pass chain down and behind the wheel spindle, around the lower spindle and up to the tie down hole in the other rail as shown. Secure a 4 in. x 4 in. spacer approximately 47-3/4 inches long between the rails, close to the chain, to prevent springing of the rails.
3. Apply lift to end being tested in accordance with paragraph 2-6, until lead on pump handle becomes excessive. If hydraulic cylinders at opposite end do not extend more than 3/8-inch during this test, the trailer may be operated under load at end tested.
4. Repeat test for opposite end of trailer.

NOTE

If hydraulic cylinders extend more than 3/8-inch at end opposite end tested (step 3), the hydraulic system must be bled in accordance with paragraph 2-8.

b. STATIC LOAD TEST. Proceed as follows for testing new trailers.

1. Centrally position trailer to pick up a 16,000 pound load.

NOTE

The load should be centrally located and, if possible, distributed along the trailer rails.

2. Raise rails evenly in accordance with paragraph 2-6 until the full load is on the trailer.

3. Hold the load for two minutes. There shall be no settling of the trailer. If settling occurs, check the following, and correct cause of failure:

   (a) All lines and connections for leakage.

   (b) Faulty pilot check valve - perform "Check Valve Test."

4. A proof load test similar to static load test should be performed after parts replacement or major repairs to the hydraulic system, using an 8,000 pound load.

c. After satisfactory performance of all tests and at no load, raise main frame and rails per paragraph 2-4 and 2-6 to maximum height. The distance from the top of the rails to the floor shall measure 89 inches.

d. Fully lower rails and with the main frame elevated to transportation position, check the hydraulic fluid level in reservoir. Refill necessary to a depth of 3 inches with fluid, Specification MIL-H-5606.

3-36. Winch Ratio Box Load Test. (See figure 3-24.)

a. Accomplish steps 1 and 2 of "LIFT TEST".

b. Attach chain (4000 lb. min. capacity) to winch draw-bar (23, figure 2-1) and center of chain between rails, with a dynamometer or similar force measuring device installed between the draw-bar and chain.

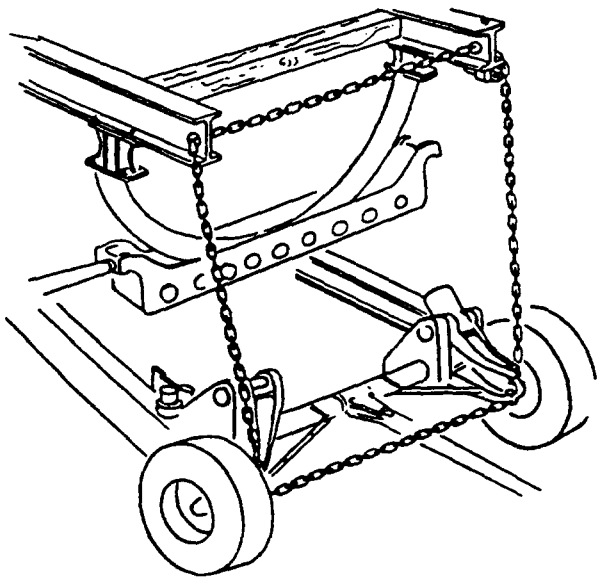


Figure 3-23. Lift Test

c. Apply load to winch by turning winch drive (18, figure 2-1). Overload clutch must disengage between 2400 and 2700 pounds reading on the force measuring device.

NOTE

If winch ratio box overload clutch disengages at less than 2400 pounds or does not disengage at 2700 pounds maximum, adjust overload clutch in accordance with paragraph 3-31.

d. Repeat test utilizing the chain installed at opposite end of trailer.

3-37. WINCH RATIO BOX OVERLOAD CLUTCH ADJUSTMENT. (See figure 3-24.)

a. Cut safety wire (1) and remove with attached lead seal (2).

b. Remove identification plate (5) by removing 2 screws and lockwashers (3, 4).

c. Straighten bent prong on washer (6).

d. Adjust lock-nut (7) to required tension. Turn clockwise to increase tension.

e. Check for correct overload disengagement per paragraph 3-30.

f. Bent prong (6) to lock adjust nut (7),

g. Reassemble identification plate (5) with two screws (3) and lockwashers (4).

h. Safety wire, using 0.035 dia. corrosion resistant lockwire (MS20995C32-10) and lead seal as shown.

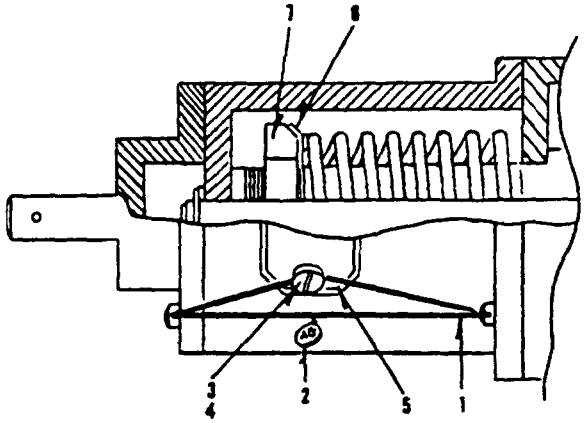


Figure 3-24. Winch Ratio Overload Adjustment